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SBG1000 Installation Guide

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Overview

The SBG1000 combines a SURFboard™ cable modem, IEEE 802.11b wireless access point, router with five-port 10/100Base-T switch, print server, and an advanced firewall into one compact product. It is the perfect networking solution for the home, home office, or small business/enterprise. You can create a custom network to share a single broadband connection, files, printers, and other peripherals like scanners, with or without wires.

The SBG1000:

- Eliminates the need for five separate products, enabling you to maximize the potential of your existing resources
- Offers enhanced network security for wired and wireless users

The features and physical appearance of your SBG1000 may differ slightly from the picture.

This product is subject to change. Not all features described in this *User Guide* are available on all SBG1000 models.

Powerful Features in a Single Unit

The Motorola SBG1000 Wireless Cable Modem Gateway combines high-speed Internet access, networking, and computer security for a home or small-office local area network (LAN). It provides:

- An integrated high-speed SURFboard cable modem for continuous broadband access to the Internet and other online services, with much faster data transfer than traditional dial-up or ISDN modems.
- A router with a five-port 10/100Base-T Ethernet switch, supporting:
  — Half- or full-duplex connections
  — Five dual-purpose switch/uplink ports
  — Auto-MDIX
- An IEEE 802.11b Wi-Fi certified wireless access point to enable laptop users to remain connected while moving around the home or small office or to connect desktop computers without installing network wiring. Depending on distance, wireless connection speeds can match that of Ethernet at 11 Mbps.
- A USB connection for a single PC.
- A single broadband connection for up to 253 computers to surf the web; all computers on the Ethernet, wireless and USB communicate as if they were connected to the same physical network.
- A built-in DHCP server to easily configure a combined wired and/or wireless Class C private LAN.
- An advanced firewall, supporting:
  — stateful-inspection
  — Intrusion detection
  — Denial-of-service attack prevention
  — Network Address Translation (NAT)
- Virtual private network (VPN) pass-through operation supporting IPSec, PPTP, or L2TP to securely connect remote computers over the Internet.
- A print server to enable one or more Windows® computers to share one printers.

Easy Setup

It is much easier to configure a LAN using the Motorola SBG1000 Wireless Cable Modem Gateway than it is using typical networking equipment:

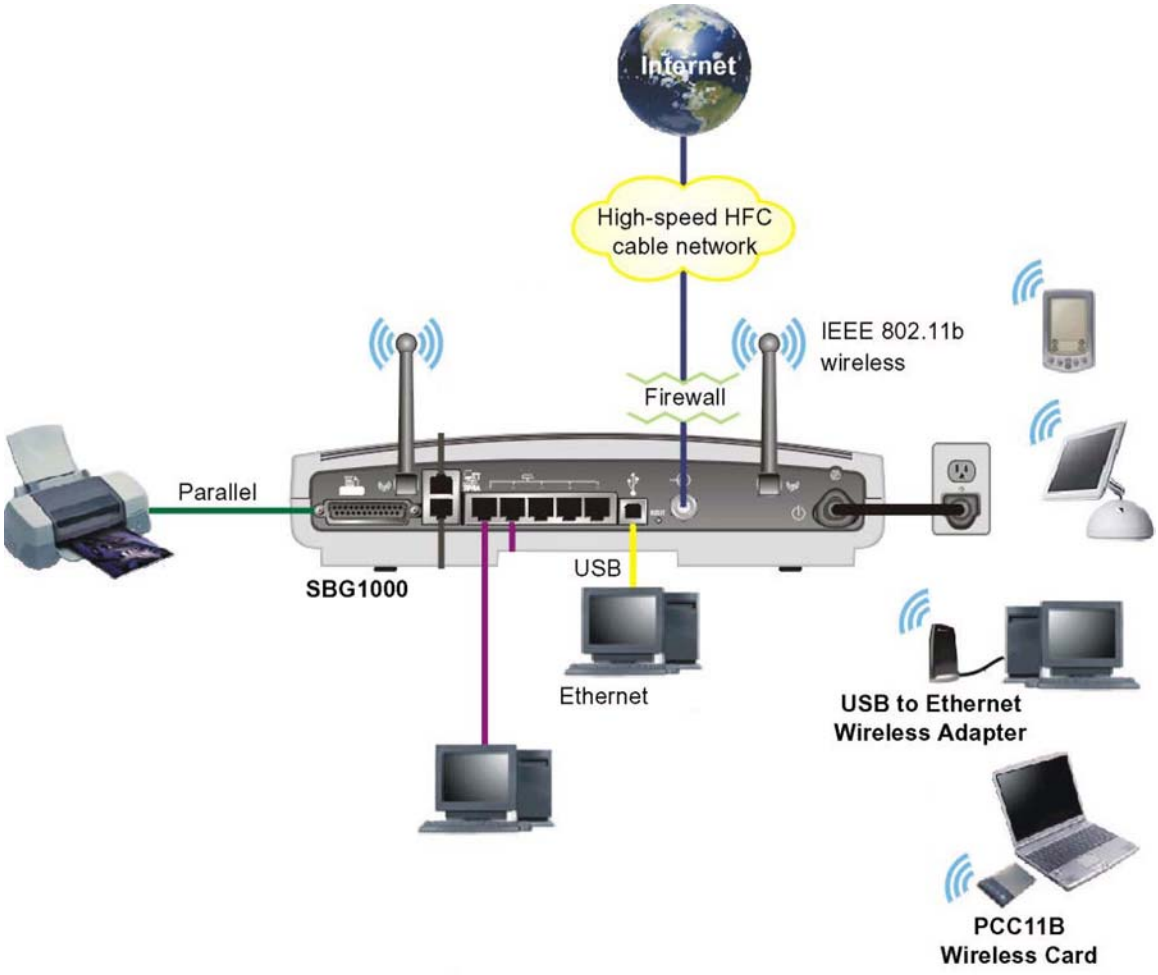
- The Installation Assistant application on the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM enables easy connection to the cable network.
- For basic operation, most default settings require no modification.
- The Setup Program provides a graphical user interface (GUI) for easy configuration of necessary wireless, Ethernet, router, DHCP, and security settings. For a list of important issues, see “Configuring the SBG1000”

Sample LAN

The sample LAN shown in the figure contains the following devices, all protected by the SBG1000 firewall:

- A printer connected to the print server through the parallel connection
- A PDA connected through the wireless IEEE 802.11b connection
- One desktop Macintosh on a wireless connection
- One desktop PC on a wireless connection using a Motorola USB Adapter
- A laptop PC on a wireless connection connected using a Motorola PC Card
- One computer connected directly to Ethernet port one
- Three computers connected to Ethernet port two using a hub or switch
- One PC connected to the USB port

Sample SBG1000 hybrid network

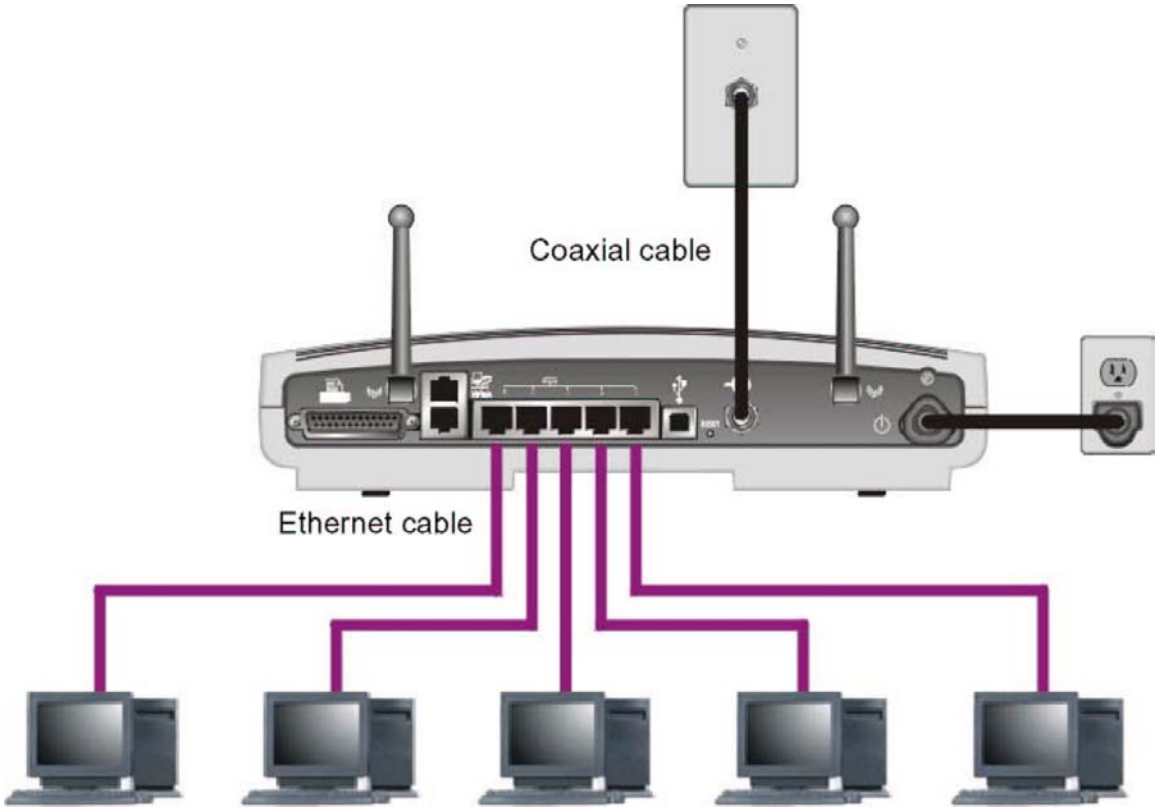


Wired Ethernet LAN

Each computer on the Ethernet LAN requires an Ethernet network interface card (NIC) and driver software installed. Because the Motorola SBG1000 Wireless Cable Modem Gateway Ethernet ports support auto-MDIX, you can use either straight-through or cross-over cable to connect a hub, switch, or computer. Use category 5 cabling for all Ethernet connections.

The physical wiring arrangement has no connection to the logical network allocation of IP addresses.

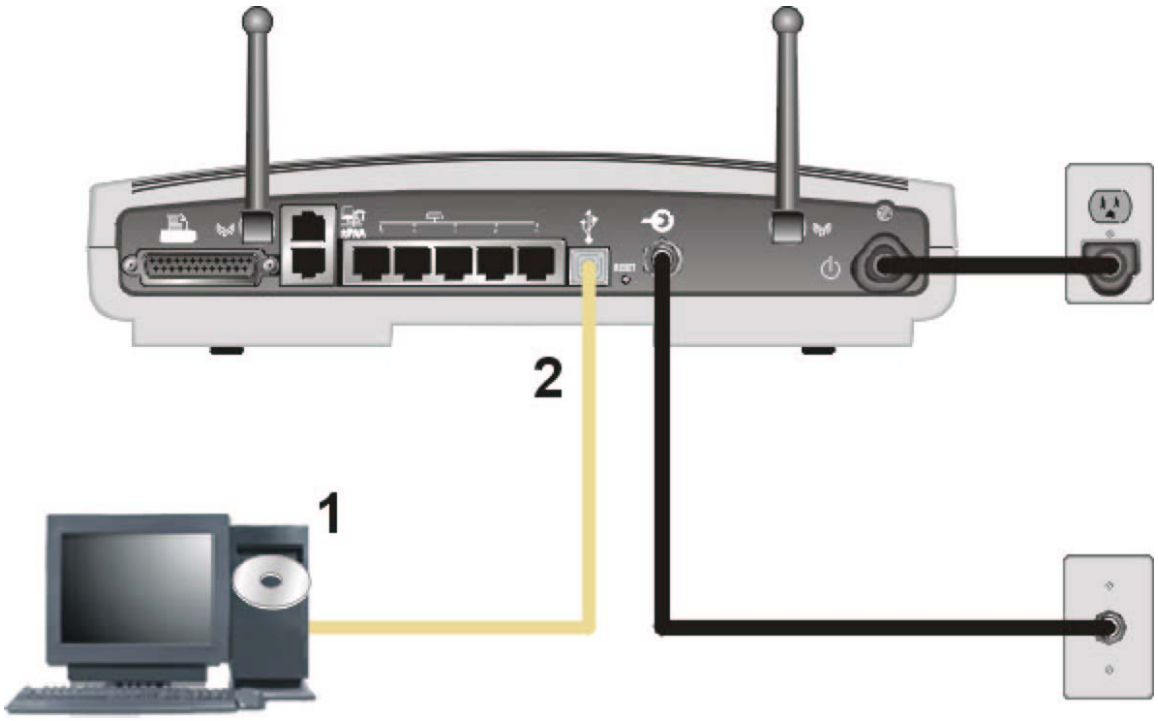
Sample SBG1000 Ethernet network connections



USB Connection

You can connect a single PC running Windows® 98, Windows XP™, Windows Me®, or Windows® 2000 to the Motorola SBG1000 Wireless Cable Modem Gateway USB port. For cabling instructions, see "Connecting a PC to the USB Port"

Sample USB connection.



Caution!

Before plugging in the USB cable, be sure the Motorola SBG1000 Wireless Cable Modem Gateway CD-ROM is inserted in the PC CD-ROM drive.

IEEE 802.11b Wireless LAN

Wireless communication occurs over radio waves rather than a wire. Like a cordless telephone, a wireless LAN uses radio signals instead of wires to exchange data. A wireless network eliminates the need for expensive and intrusive wiring to connect computers throughout the home or office. Mobile users can remain connected to the network even when carrying their laptop to different locations in the home or office. Each computer on a wireless LAN requires a wireless adapter.

Security

The Motorola SBG1000 Wireless Cable Modem Gateway provides:

- A firewall to protect the SBG1000 LAN from undesired attacks over the Internet
- Security measures to prevent eavesdropping of wireless data

Network Address Translation (NAT) provides some security because the IP addresses of SBG1000 LAN computers are not visible on the Internet. *The logical network diagram does not necessarily correspond to the network cabling. A full discussion of network security is beyond the scope of this document.*

Firewall

The SBG1000 firewall protects the SBG1000 LAN from undesired attacks and other intrusions from the Internet. It provides an advanced integrated stateful-inspection firewall supporting intrusion detection, session tracking, and denial-of-service attack prevention. The firewall:

- Maintains state data for every TCP/IP session on the OSI network and transport layers
- Monitors all incoming and outgoing packets, applies the firewall policy to each one, and screens for improper packets and intrusion attempts
- Provides comprehensive logging for all:

— User authentications
— Rejected internal and external connection requests
— Session creation and termination
— Outside attacks (intrusion detection)

You can configure the firewall filters to set rules for port usage and to block specific IP domains and networks.

Wireless Security

To prevent unauthorized eavesdropping of data transmitted over the wireless LAN, you must enable wireless security. *The default Open authentication setting provides no security for transmitted data.*
You can encrypt data transmitted over the IEEE 802.11b wireless interface by configuring a WEP key on the Motorola SBG1000 Wireless Cable Modem Gateway and wireless LAN clients (stations). You can also define a MAC access control list to restrict wireless LAN access to specified clients based on the client MAC address. If you enable closed network operation, the network name (ESSID) is not transmitted in the IEEE 802.11b beacon frame. This provides additional network protection because only IEEE 802.11b stations that are configured with your network name can associate with the SBG1000. Closed network operation is not part of the IEEE 802.11b standard.

Virtual Private Networks

The SBG1000 allows multiple tunnel VPN pass-through operation to securely connect remote computers over the Internet through the SBG1000. The SBG1000:

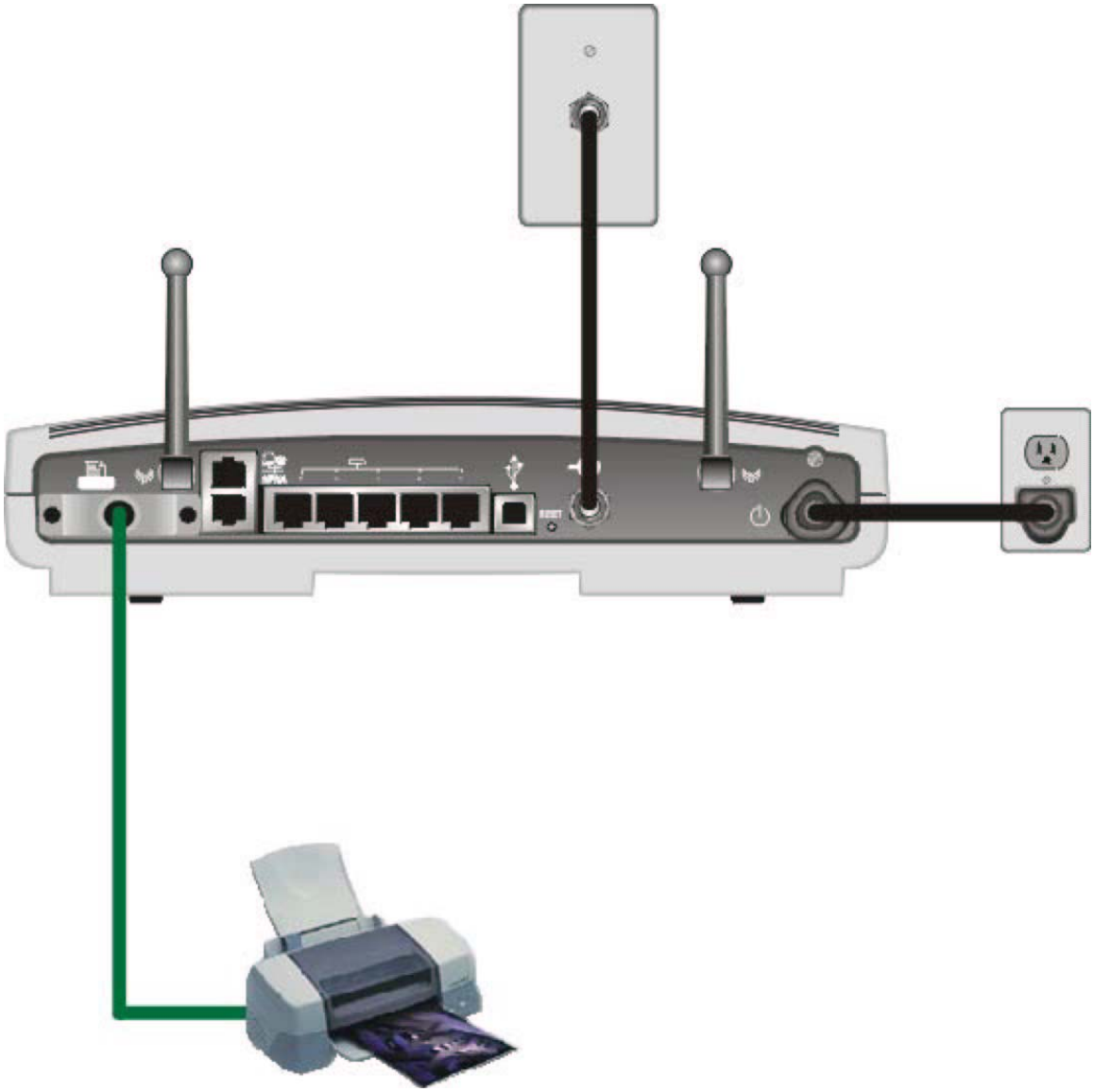
- Is compatible with Point to Point Tunneling Protocol (PPTP) and Layer 2 Tunneling Protocol (L2TP)
- Is fully interoperable with any IPSec client or gateway and ANX certified IPSec stacks

Print Server

You can connect a printer to the Motorola SBG1000 Wireless Cable Modem Gateway back panel using a standard DB-25 connector. The print server:

- Enables Windows computers on the wired or wireless SBG1000 LAN to share a printer
- Supports the SMB, LPR, AppleTalk® printing protocols

Printer connection



Connecting the SBG1000 to the Cable System

Allow 5 to 30 minutes the first time you turn on the SBG1000 to find and lock on the appropriate communications channels.

1 Be sure the computer is on and the SBG1000 is unplugged.

2 Connect one end of the coaxial cable to the cable outlet or splitter.

3 Connect the other end of the coaxial cable to the cable connector on the SBG1000.
Hand-tighten the connectors to avoid damaging them.

4 Insert the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM into the CD-ROM drive.

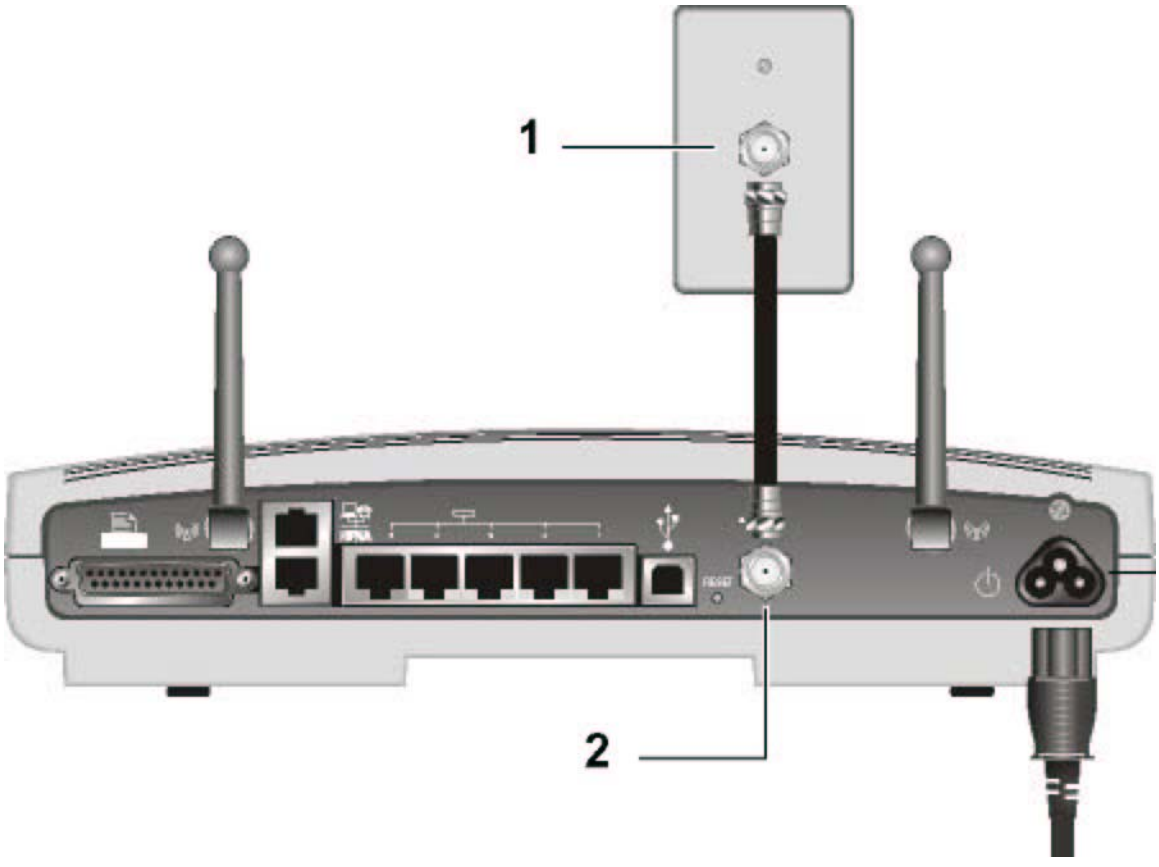
6 Plug the power cord into the power connector on the SBG1000.

7 Plug the power cord into the electrical outlet. *This turns the Motorola SBG1000 Wireless Cable Modem Gateway on. You do not need to unplug it when not in use.*

8 Check that the lights on the Front Panel cycle through this sequence:

- Power icon turns on when AC power is connected to the SBG1000 and indicates that the power supply is working properly.
- RX (receive) light flashes while scanning for the receive channel and changes to solid green when the receive channel is locked.
- TX (transmit) light flashes while scanning for the send channel and changes to solid green when the send channel is locked.
- LNK (link) light flashes during SBG1000 registration and configuration and changes to solid green when the cable modem wireless gateway is registered.
- Globe icon flashes when the SBG1000 is transmitting or receiving data.

Connecting the SBG1000 to the cable system



Cabling the Ethernet

After connecting to the cable system, you can connect your wired Ethernet. Some samples are shown in "Wired Ethernet LAN" on page. Detailed information about network cabling is beyond the scope of this document. You must install proper drivers for the Ethernet NIC adapter.

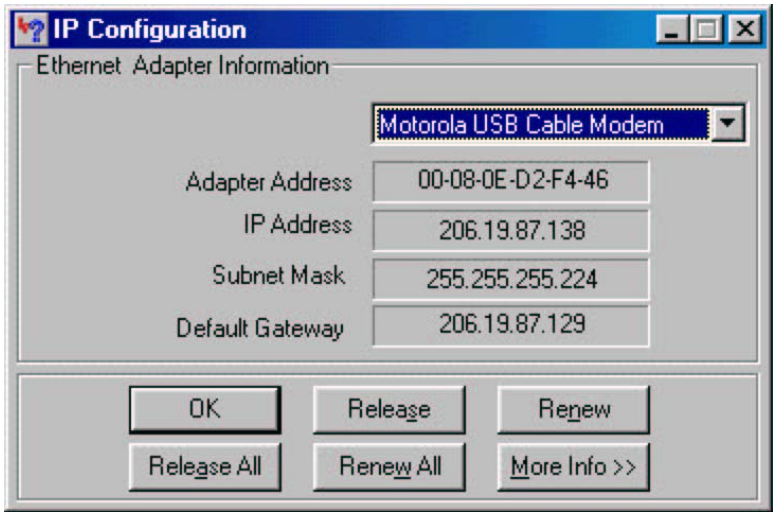
Obtaining an IP address in Windows 98, Windows 98 SE, or Windows Me

You must do the following on each Ethernet client PC running Windows 98, Windows 98 SE, or Windows Me:

1 On the Windows Desktop, click **Start**.

2 Select **Run**. The Run window is displayed.

3 Type **winipcfg.exe** and click **OK.** The IP Configuration window is displayed:



Obtaining an IP address in Windows 2000 or Windows XP

You must do the following on each Ethernet client PC running Windows 2000 or Windows XP:

1 On the Windows Desktop, click **Start**.

2 Select **Run**. The Run window is displayed.

3 Type **cmd** and click **OK** to display a command prompt window.

4 Type **ipconfig /renew** and press ENTER to obtain an IP address for the PC from the DHCP server on the SBG1000.

5 Type **exit** and press ENTER to return to Windows.

Obtaining an IP address on Macintosh or UNIX Systems

Follow the instructions in your user manual.

Connecting a PC to the USB Port

You can connect a single PC running Windows 98, Windows XP, Windows Me, or Windows 2000 to the Motorola SBG1000 Wireless Cable Modem Gateway USB port.

To connect a PC to the USB port:

1 Connect the USB cable to the USB port on the SBG1000.

2 Connect the other end to the USB port on the computer.

3 Install the USB driver following the appropriate procedure for "Setting Up a USB Driver"

Caution!

Before plugging in the USB cable, be sure the Motorola SBG1000 Wireless Cable Modem Gateway CD-ROM is inserted in the PC CD-ROM drive.

Setting Up the Wireless LAN

For information about wireless LAN setup, see "Setting Up the Wireless LAN"

Connecting the Printer

Connect the printer to the Motorola SBG1000 Wireless Cable Modem Gateway printer port. If a cable was supplied with the printer, use that cable. Consult your printer documentation to determine cabling requirements from the SBG1000 to the printer.

After connecting the printer, power it on and follow the instructions for "Configuring the Print Server"

Configuring the SBG1000

Configuring the SBG1000 includes:

- Starting the SBG1000 Setup Program
- Changing the Default Password
- Getting Help
- Setting the Firewall Policy

For more information about configuration, see "Configuring TCP/IP" , "Setting Up the Wireless LAN", "Configuring the Print Server" or "Setting Up a USB Driver"

For normal operation, you do not need to change most default settings. The following caution statements summarize the issues you must be aware of:

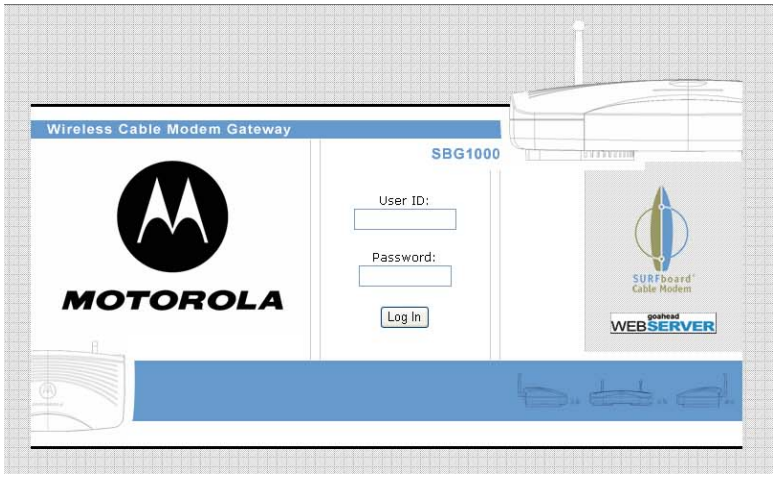
Caution!

To prevent unauthorized configuration, change the default password *immediately* when you first configure the Motorola SBG1000 Wireless Cable Modem Gateway. See "Changing the Default Password". Firewalls are not foolproof. Choose the most secure firewall policy you can. See "Setting the Firewall Policy"

For a wireless LAN only, be sure you follow the instructions in "Setting Up the Wireless LAN"

Starting the SBG1000 Setup Program

1 On a computer on the LAN, open a web browser.
2 In the Address or Location field, type **192.168.100.1** and press ENTER to display the Login window:



3 Enter the User ID and password and click Log in.

Click To Perform

Gateway Configure and monitor the gateway preferences (see "Configuring the Gateway")
Wireless Configure and monitor the wireless interface (see "Setting Up the Wireless LAN")
Firewall Configure and monitor the firewall (see "Setting the Firewall Policy")
Printer Configure the SBG1000 print server (see "Configuring the Print Server")
Admin Changing the Default Password)
Help Display information about the SBG1000 (see "Getting Help")
Info Display information about the SBG1000 Setup Program
Reboot Restart the SBG1000. It is the same as pressing the reset button on the Rear Panel for less than five seconds.
*For some settings, after you edit the field and click Apply, you are warned that you must **Reboot** for your change to take effect. Rebooting takes 10 to 15 seconds. After rebooting, you must log-in again.*

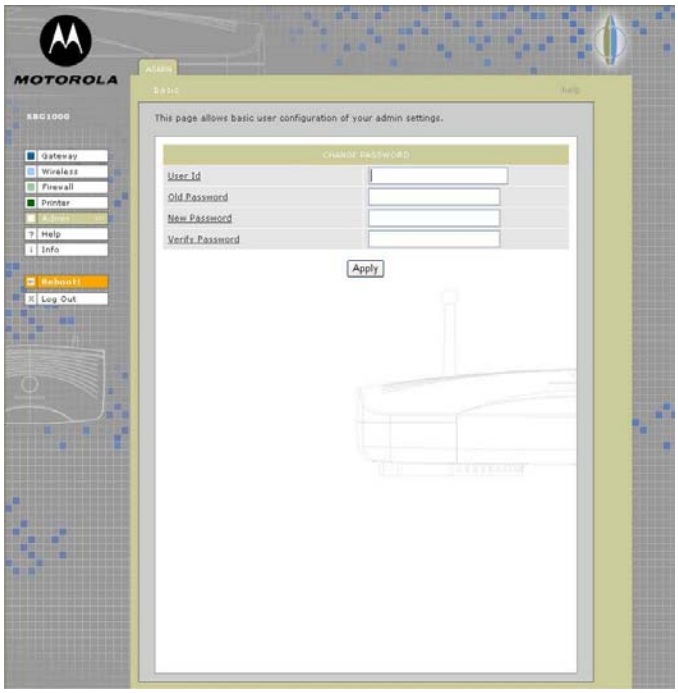
Changing the Default Password

To change the default password:

1 On the SBG1000 Setup Program screen, click **Admin** to display the ADMIN — basic page:

Caution!

To prevent unauthorized configuration, change the default password *immediately* when you first configure the Motorola SBG1000 Wireless Cable Modem Gateway.



2 Type the old *password* in the **Old Password** field. (The default password is “motorola.”)

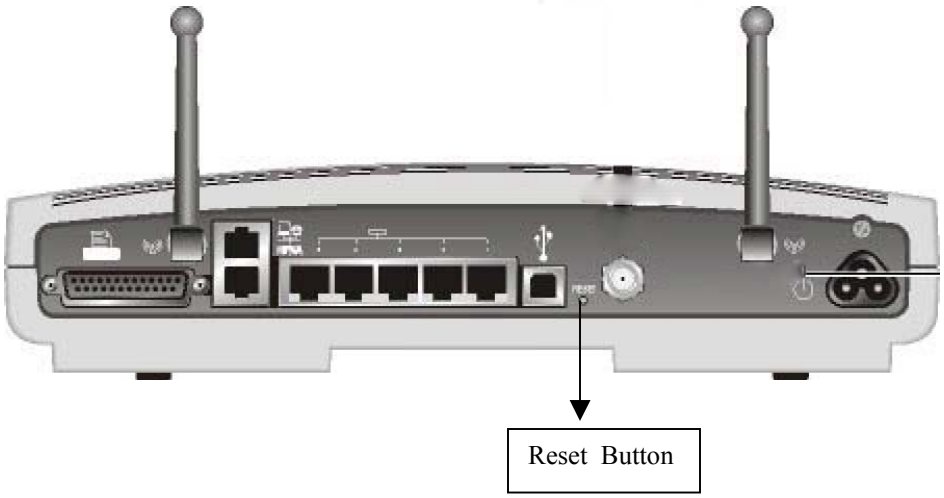
3 Type the new *password* in the **New Password** field.

(Please write down your new password here _____)

4 Type the new *password* again in the **Verify Password** field.

5 Click **Apply** to apply your changes.

Resetting the SBG 1000



1 To reset all values to their defaults, hold down the button for more than five seconds. Resetting may take 5 to 30 minutes because the SBG1000 must find and lock on the appropriate communications channels.

** Warning!!! This will reset the SBG 1000 to default settings. All your configurations will be lost and you may need to re-configure your SBG 1000.

Question:
I have forgotten my SBG1000 setup password but I do not want to reset the password using the SBG1000 reset button because this will also reset my SBG1000 to factory default settings. What should I do?

Ans:
You can call our Customer Care Consultant at 6873 7373. We will be able to reset your password without resetting the settings of your SBG1000. However please note that there will be an administrative charge of S$5 (subject to prevailing GST).

Configuring the Gateway

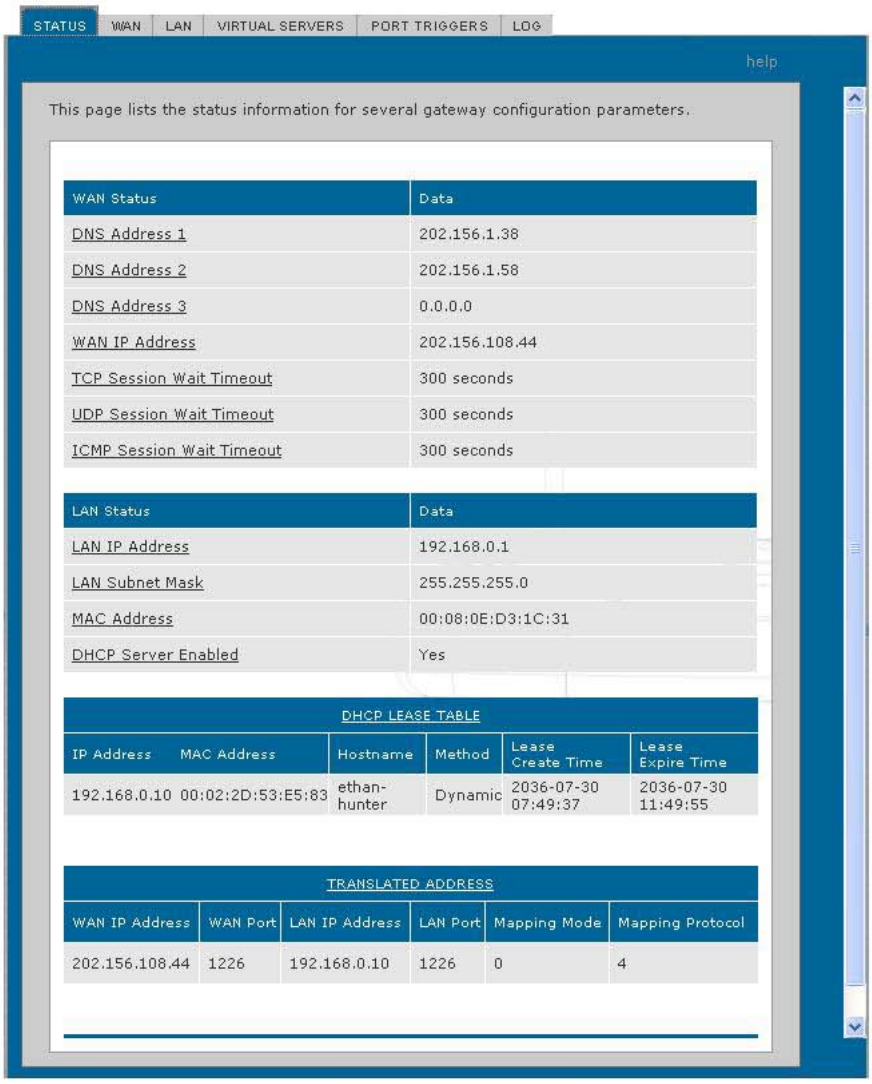
This section describes the Gateway configuration pages in the SBG1000 Setup Program:

- Gateway > STATUS Page
- Gateway > WAN Page
- Gateway > LAN — nat config Page
- Gateway > LAN — dhcp server config Page
- Gateway > LAN — dhcp reservations Page
- Gateway > Virtual Server
- Gateway > Port Trigger
- Gateway > LOG Page

*For some settings, after you edit the field and click Apply, you are warned that you must **Reboot** for your change to take effect. Rebooting takes 10 to 15 seconds. After rebooting, you must log-in again.*

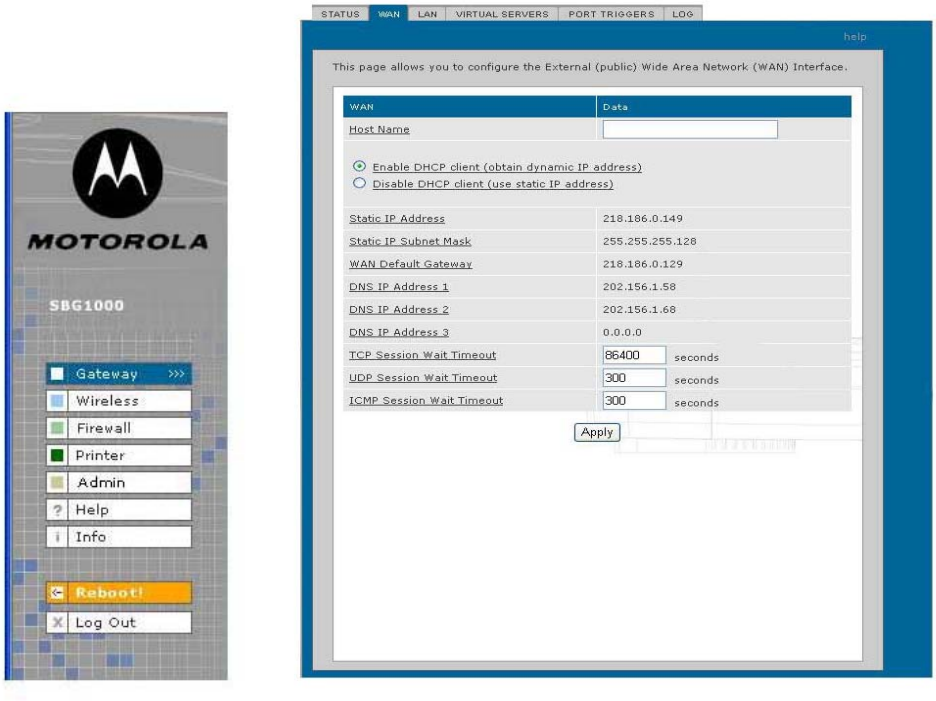
Gateway > STATUS Page

This page displays the gateway status information:



Gateway > WAN Page

Use this page to configure the external (public) wide area network (WAN) interface:



Gateway > WAN page fields

Field Description

Host Name If the cable service provider requires a hostname to access to their network, type the *hostname* they provided in this field. The default is None.

Enable DHCP Client Enabling the DHCP client causes the wireless gateway to automatically obtain the public IP address, subnet mask, domain name, and DNS server(s). Most commonly, the DHCP client is enabled if the cable service provider automatically assigns a public IP address from their DHCP server. Enable DHCP Client is on by default.

Disable DHCP Client

If the cable service provider does not automatically assign a public IP address using DHCP, they must provide a static IP address. Select Disable DHCP Client. When you disable the DHCP client, you must type the static IP address, subnet mask, DNS server(s), and domain name (if necessary) in the fields provided. Disable DHCP Client is off by default.

Static IP Address

If Disable DHCP Client is on, type the static IP address provided by the cable service provider, in dotted-decimal format. The default is None.

Static IP Address Subnet Mask

If Disable DHCP Client is on, type the subnet mask associated with the static IP address, in dotted-decimal format. The default is None.

WAN Default Gateway

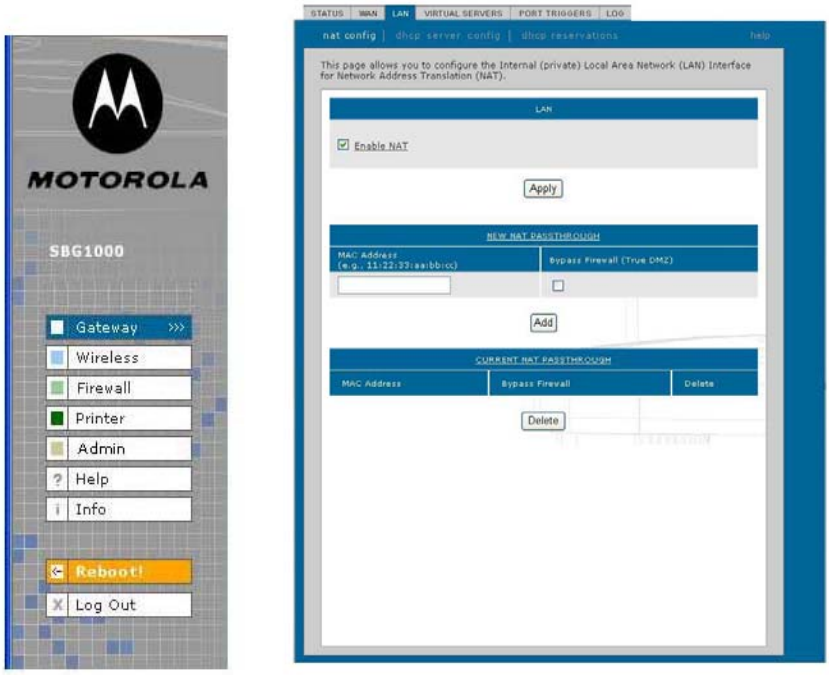
When using a statically assigned IP address from your ISP, enter the default gateway the SBG should be using to communicate with on the WAN..

Gateway > WAN page fields (continued)

Field	Description
DNS IP Address 1 **DNS IP Address 2** **DNS IP Address 3**	The cable service provider DNS server provides name-to-IP address resolution. If the cable service provider does not automatically assign DNS addresses from their DHCP server, they must provide at least one DNS server IP address to enter in these fields, in dotted-decimal format. The default is None.
TCP Session Wait Timeout	Sets the maximum time in minutes to wait before assuming a TCP session has timed out. The default is 5 minutes.
UDP Session Wait Timeout	Sets the maximum time in minutes to wait before assuming a UDP session has timed out. The default is 5 minutes.
ICMP Session Wait Timeout	Sets the maximum time in minutes to wait before assuming an ICMP session has timed out. The default is 5 minutes.
Apply	Click to apply your changes.

Gateway > LAN — NAT config Page

Use this page to configure NAT:



Gateway > LAN — NAT config page fields

Field or Button Description

LAN

Enable NAT If enabled, the single HFC IP Address (public IP address) assigned by the cable service provider is mapped to many private IP addresses on the SBG1000 LAN.

Apply Click to apply your changes. You must reboot the SBG1000.

NEW NAT PASSTHROUGH

NAT Passthrough is used to identify which CPEs are passthrough devices, not subject to network address translation. Up to 32 NAT passthrough CPEs can be entered using the CPE MAC address. In order to use the NAT Passthrough feature a separate public IP address must be provided for each CPE device you wish to simultaneously place in NAT Passthrough mode.

MAC Address Sets the MAC address of the passthrough client. The format is 16 hexadecimal numerals.

DMZ Check the box to set the MAC address as a de-militarized zone (DMZ) client. A DMZ is a computer on the LAN that can be accessed from the public Internet.

Add Click to add the IP address to the reserved IP address table.

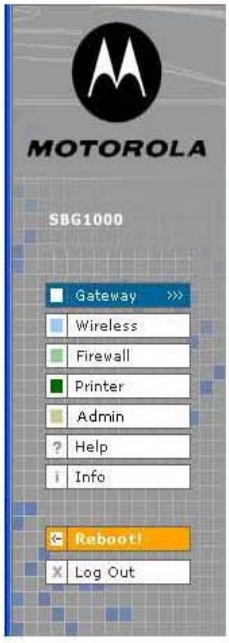
CURRENT NAT PASSTHROUGH

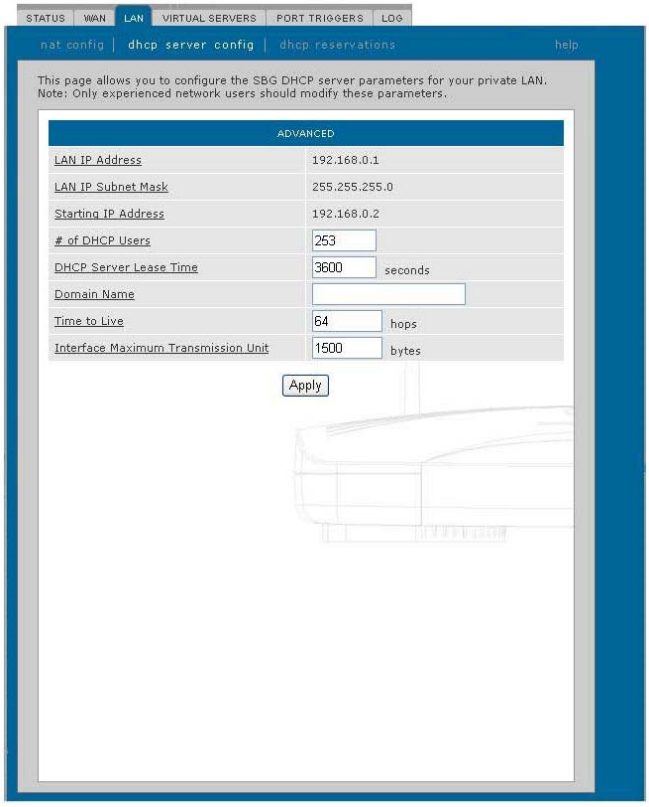
Displays the NAT passthrough list.

Delete Click to delete the MAC address from the NAT passthrough list.

Gateway > LAN — dhcp server config Page

Experienced network administrators *only* can use this page to perform advanced DHCP server configuration:





CAUTION!

Do not modify these settings unless you are an experienced network administrator with strong knowledge of IP addressing, subnetting, and DHCP.

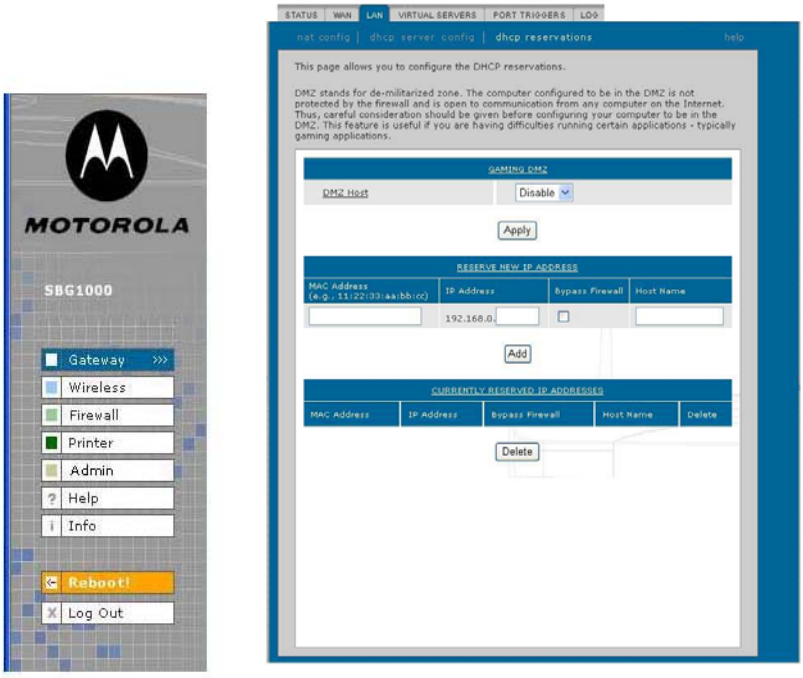
Gateway > LAN — advanced page fields

Field Description

LAN IP Address Sets the SBG1000 LAN IP address, in dotted-decimal format. The default is 192.168.0.1.
LAN IP Subnet Mask Sets the subnet mask, in dotted-decimal format. The default is 255.255.255.0
Starting IP Address Sets the starting IP address assigned by the SBG1000 DHCP server to clients, in dotted-decimal format. The default is 192.168.0.2.
# of DHCP Users Sets the number of clients for the SBG1000 DHCP server to assign a private IP address. There are 253 possible client addresses. The default is 253.
DHCP Server Lease Time
Sets the time in seconds that the SBG1000 DHCP server leases an IP address to a client. The default is 3600 seconds.
Domain Name Sets the domain name for the SBG1000 LAN. The default is None.
Time To Live Sets the TTL (hop limit) for outbound packets. The default is 64.
Interface Maximum Transmission Unit
Sets the SBG1000 LAN MTU, in bytes. The minimum is 68 bytes. The default is 1500 bytes.
Apply Click to apply your changes. You must reboot the SBG1000.

Gateway > LAN — dhcp reservations Page

Use this page to configure DHCP reservations:



Gateway > LAN — dhcp reservations page fields

Field Description

RESERVE NEW IP ADDRESS

You can reserve up to 32 IP addresses assigned by the SBG1000 DHCP server for specific LAN clients. For example, you can reserve an IP address for a private FTP server to ensure that it always receives the same private IP address.

MAC Address Type the MAC address of the DHCP client for which a reserved IP address is required. The format is 16 hexadecimal numerals.

IP Address Sets the host portion of the reserved IP address for the LAN client having the specified MAC address. When the LAN client requests an IP address, the SBG1000 DHCP server assigns the client this IP address.

DMZ Check this box if you want the host to bypass NAT and be exposed directly to the Internet. When configuring a client as a NAT passthrough device, you can specify whether it should be a de-militarized zone (DMZ) host. A DMZ host is completely exposed to the Internet. *Any device configured as a DMZ is open to Internet hackers and should be used with extreme caution*.

Host Name If your ISP requires a hostname to access their network, enter the hostname provided to you in the Host Name field.

Add Click Add to reserve a new IP address.

CURRENTLY RESERVED IP ADDRESSES

Displays all DHCP clients that have specific IP addresses reserved for their use by MAC and IP address.

MAC Address Displays the reserved MAC addresses.

IP Address Displays the reserved IP addresses.

DMZ Displays whether the client is configured as a DMZ.

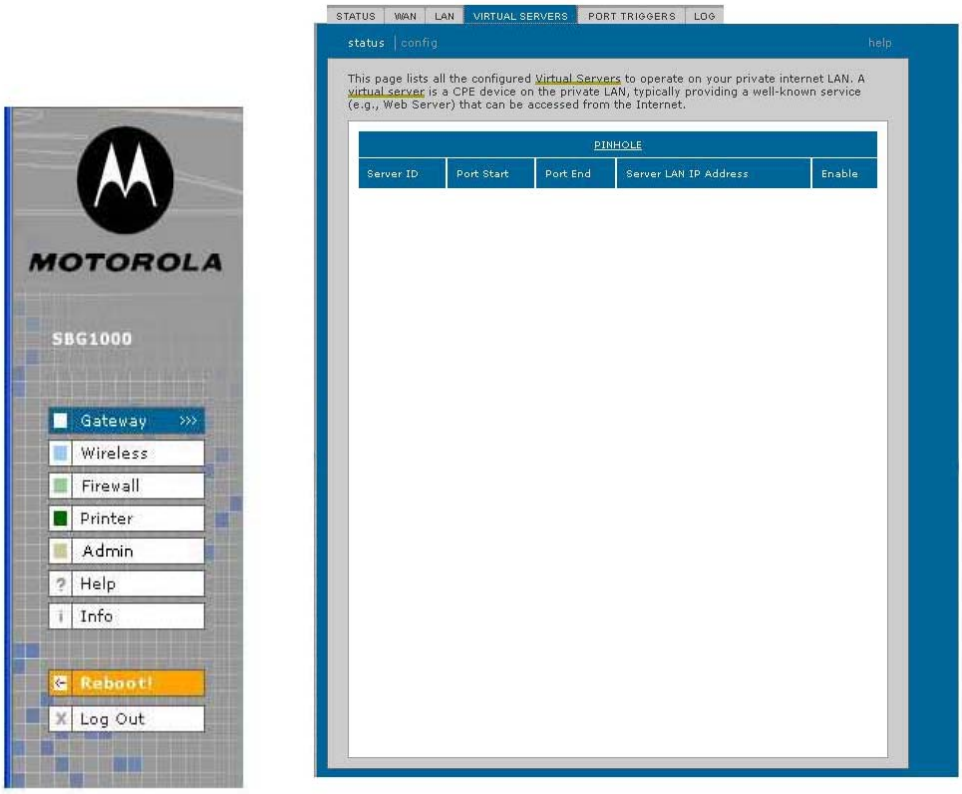
Host Name Displays the host name.

Delete Click this box to remove the reserved IP address for the client.

Delete Click this button to remove the reserved IP addresses for clients designated by the Delete box.

Gateway > Virtual Server – status page

Use this page to check the status of Virtual Server. Please refer to the following page to configure a Virtual server.



Gateway > virtual server

Gateway > Virtual Server – Configuration page

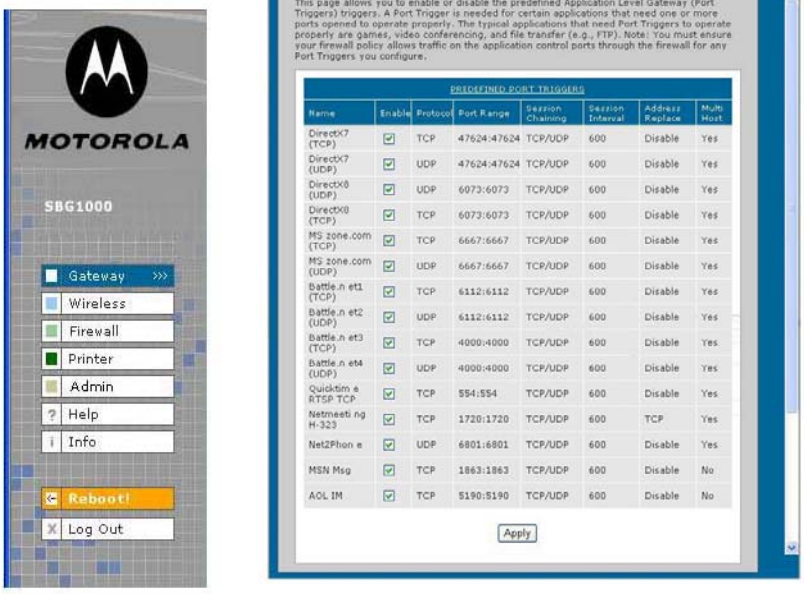
Use this page to configure Virtual Server

Field Description

Template
If Predefined template is selected (HTTP, FTP, etc...), the Server ID, Port Start, Port End default values are provided, and you only need to enter LAN IP Address and change default values if necessary.
Server ID Up to 32 Virtual Servers can be configured. Enter a unique identifier for your custom virtual server. The typical practice is to use the protocol as a unique identifier (e.g., ftp).
Port Start
The require starting port
Port End
The required ending port
LAN IP address
The reserved LAN IP address for the server.
Enable
Click Enable the virtual server being created.

Gateway > Port trigger – Predefined Page

Use this page to configure Port Trigger

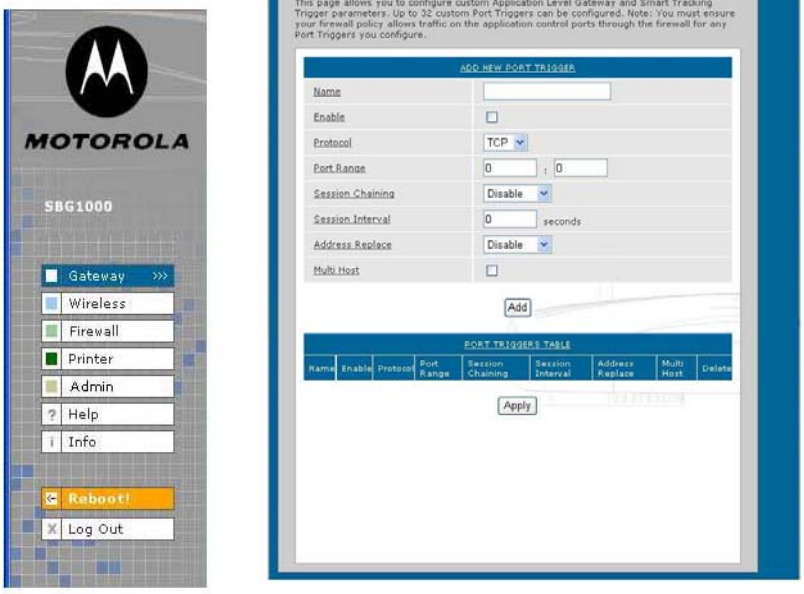

MOTOROLA
SBG1000
Gateway
Wireless
Firewall
Printer
Admin
Help
Info
Reboot!
Log Out
STATUS
WAN
LAN
VIRTUAL SERVERS
PORT TRIGGERS
LOG
predefined | custom
help
This page allows you to enable or disable the predefined Application Level Gateway (Port Triggers) triggers. A Port Trigger is needed for certain applications that need one or more ports opened to operate properly. The typical applications that need Port Triggers to operate properly are games, video conferencing, and file transfer (e.g., FTP). Note: You must ensure your firewall policy allows traffic on the application control ports through the firewall for any Port Triggers you configure.
PREDEFINED PORT TRIGGERS
Name
Enable
Protocol
Port Range
Session Chaining
Session Interval
Address Replace
Multi Host
DirectX7 (TCP) TCP 47624:47624 TCP/UDP 600 Disable Yes
DirectX7 (UDP) UDP 47624:47624 TCP/UDP 600 Disable Yes
DirectX8 (UDP) UDP 6073:6073 TCP/UDP 600 Disable Yes
DirectX8 (TCP) TCP 6073:6073 TCP/UDP 600 Disable Yes
MS zone.com (TCP) TCP 6667:6667 TCP/UDP 600 Disable Yes
MS zone.com (UDP) UDP 6667:6667 TCP/UDP 600 Disable Yes
Battle.n et1 (TCP) TCP 6112:6112 TCP/UDP 600 Disable Yes
Battle.n et2 (UDP) UDP 6112:6112 TCP/UDP 600 Disable Yes
Battle.n et3 (TCP) TCP 4000:4000 TCP/UDP 600 Disable Yes
Battle.n et4 (UDP) UDP 4000:4000 TCP/UDP 600 Disable Yes
Quicktim e RTSP TCP TCP 554:554 TCP/UDP 600 Disable Yes
Netmeeti ng H-323 TCP 1720:1720 TCP/UDP 600 TCP Yes
Net2Phon e UDP 6801:6801 TCP/UDP 600 Disable Yes
MSN Msg TCP 1863:1863 TCP/UDP 600 Disable No
AOL IM TCP 5190:5190 TCP/UDP 600 Disable No
Apply

Gateway > LAN Port Trigger

This page allows you to enable or disable the predefined Application Level Gateway (Port Triggers) triggers. A Port Trigger is needed for certain applications that need one or more ports opened to operate properly. The typical applications that need Port Triggers to operate properly are games, video conferencing, and file transfer (e.g., FTP). Note: You must ensure your firewall policy allows traffic on the application control ports through the firewall for any Port Triggers you configure

Gateway > Port trigger – Custom Page

Use this page to customize port trigger



Field Description

Name

Enter the unique name for the Port Triggers. This is typically the protocol.

Enable

Select the check box to enable the custom Port Triggers you have created

Protocol

Enter the transport protocol used by the Port Triggers

Port Range

Enter the port range used by the Port TriggersSession

Chaining

Certain applications may open up one or more ports in different port ranges to operate properly. The session chaining parameter is used to indicate whether the Port Triggers should chain subsequent traffic to the initial session or consider the traffic to be a new session

Session Interval

Enter the session interval appropriate for the custom application you are configuring. If the Port Triggers detects traffic on the port range within the session interval, it is considered to be traffic related to the initial sessionAddress

Address Replace

Address replacement is required for applications that embedded IP addresses in the data portion of a packet

Multi Host

Multiple host support determines whether the SBG enables traffic to and from a third party host

Setting Up the Wireless Network

This section describes the Gateway configuration pages in the SBG1000 Setup Program:

- Wireless > STATUS Page
- Wireless > Network Page
- Wireless > Security — Basic Page
- Wireless > Security — Advance Page
- Wireless > Statistics

*For some settings, after you edit the field and click Apply, you are warned that you must **Reboot** for your change to take effect. Rebooting takes 10 to 15 seconds. After rebooting, you must log-in again.*

Wireless Status Page

Configuring a Unique Wireless Network Name

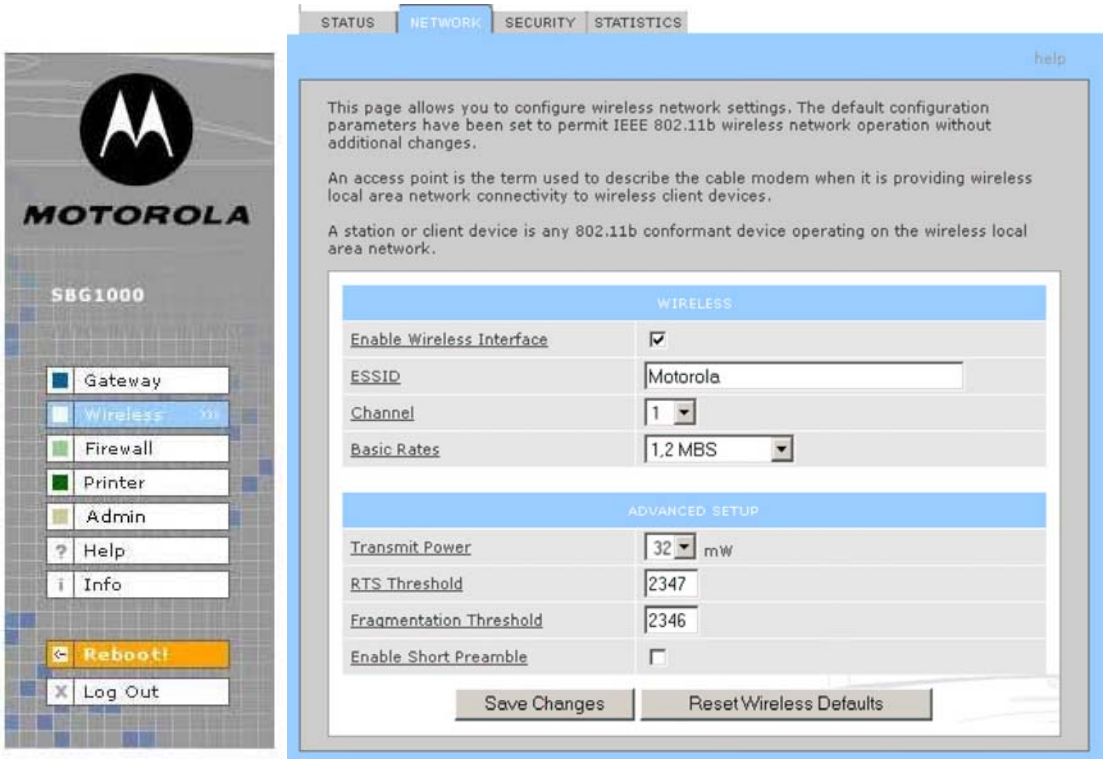
All clients (stations) on the wireless LAN must have the same network name (ESSID) as the access point on the SBG1000. *You must configure the same ESSID on all IEEE 802.11b LAN clients.*

To configure the ESSID:

1 Start the SBG1000 Setup Program as described in "Starting the SBG1000 Setup Program" .

2 On the left frame, click **Wireless**.

3 Click the **NETWORK** tab to display:



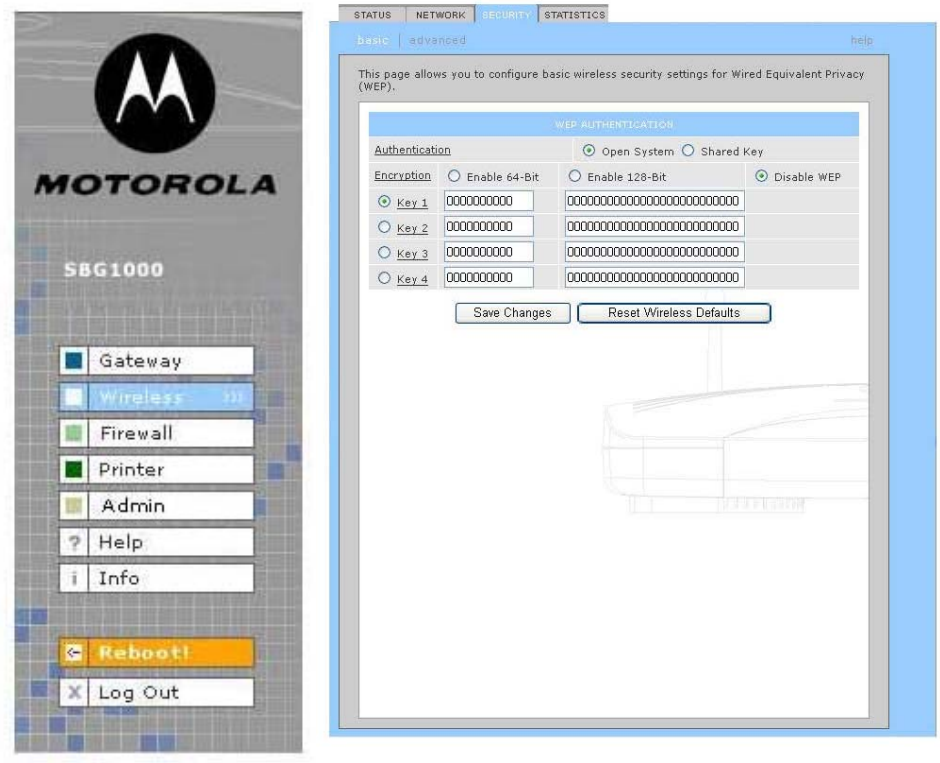
4 In the ESSID field, type a *name*. It can be any alphanumeric, case-sensitive string up to 32 characters. The default is "Motorola." ***Do not use the default ESSID***.
(Please write down your new ESSID for future reference. ESSID = _____)

5 Click **Save Changes** to save your changes.

Configuring Wireless Security > Basic

You can configure the Wired equivalent Privacy (WEP)

To configure the Wireless Security:
1 On the left frame, click **Wireless**.
2 Click the **Security** tab and select Basic to display the following:



Field or Button Description

WEP
Wired Equivalent Privacy (WEP) is an encryption mechanism used to protect the privacy of data transmitted on the wireless network. WEP keys are used to encrypt and decrypt the data transmitted and received by the access point. The SBG permits up to four 64 or 128-bit WEP encryption keys to be entered. However, only one WEP key can be active at any given time.

Open System
Any client device is allowed to authenticate with the access point and transmit data to any other client devices on the wireless network. Open authentication does NOT provide any security for data transmitted on the wireless network.

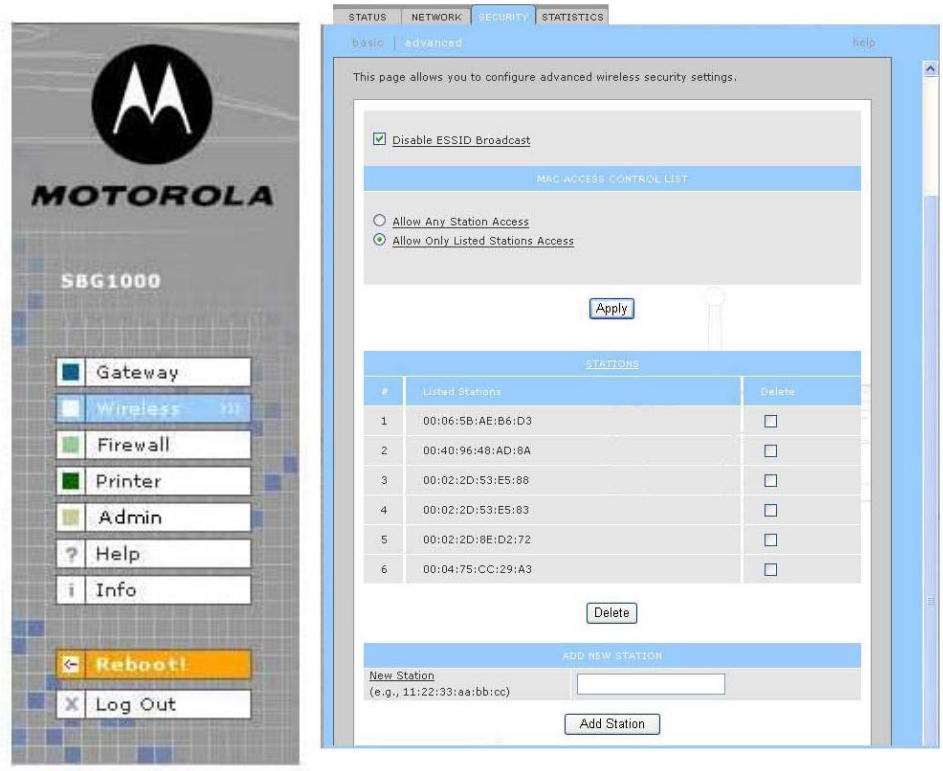
Shared Key
Shared Key authentication provides privacy for the data transmitted on the wireless network. Only device that is using Shared Key authentication and the WEP key exactly matches the access point WEP key, then the access point will permit data to be transmitted on the wireless network. The WEP keys should be changed frequently as a matter of good security practice for the wireless network. Shared Key authentication provides 64-bit or 128-bit WEP encryption.

Key
SBG1000 permits up to four WEP keys to be entered. However, only one WEP key can be active at any given time. (Please note hexadecimal characters are entered for the key. Hexadecimal characters include the numbers 0 through 9 and the letters A through F. The letters are not case-sensitive.)

Configuring Wireless Security > Advance

Mac address control list and disable ESSID broadcast.

To configure the Wireless Mac address control list and disable ESSID broadcast:
1 On the left frame, click **Wireless**.
2 Click the **Security** tab and select Advance to display the following:



Field or Button Description

Disable ESSID Broadcast
If you disable ESSID broadcast, the network name (ESSID) will not be transmitted in the 802.11b beacon frame. This provides some additional protection for your network because only 802.11b stations that know your network name can be configured to associate with the SBG. Note: Disable ESSID broadcast operation is not part of the IEEE 802.11b standard.

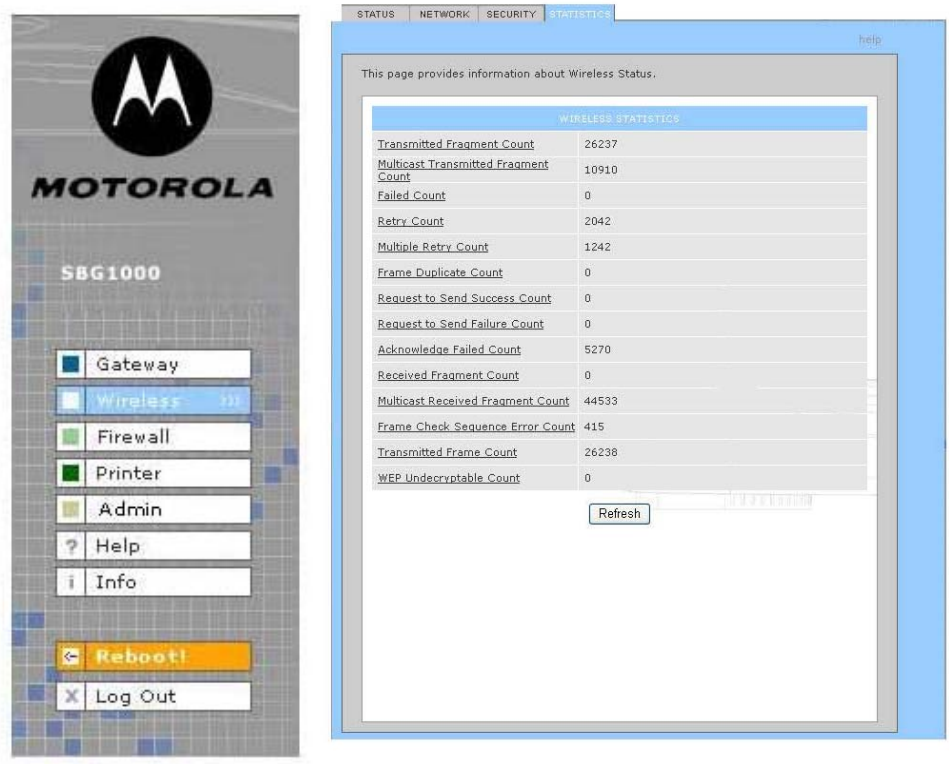
MAC Access Control List
The MAC ACL is used to restrict access to the wireless link to explicitly identified individual 802.11b station MAC addresses. Up to 32 individual 802.11b station MAC addresses can be entered. The following configuration modes are available:

• Allow Listed – This mode only allows 802.11b stations listed in the MAC ACL table access to the wireless network.

• Allow Any – This mode allow any 802.11b station access to the wireless network.

Wireless Statistics

1 On the left frame, click **Wireless**.
2 Click on **Statistics**:



Getting Help

To get help on any underlined item, field, click the text. For example, if you click a field or the help button on the ADMIN — basic page, the following help is displayed:

Setting the Firewall Policy

To select a predefined policy for all packets processed by the firewall:

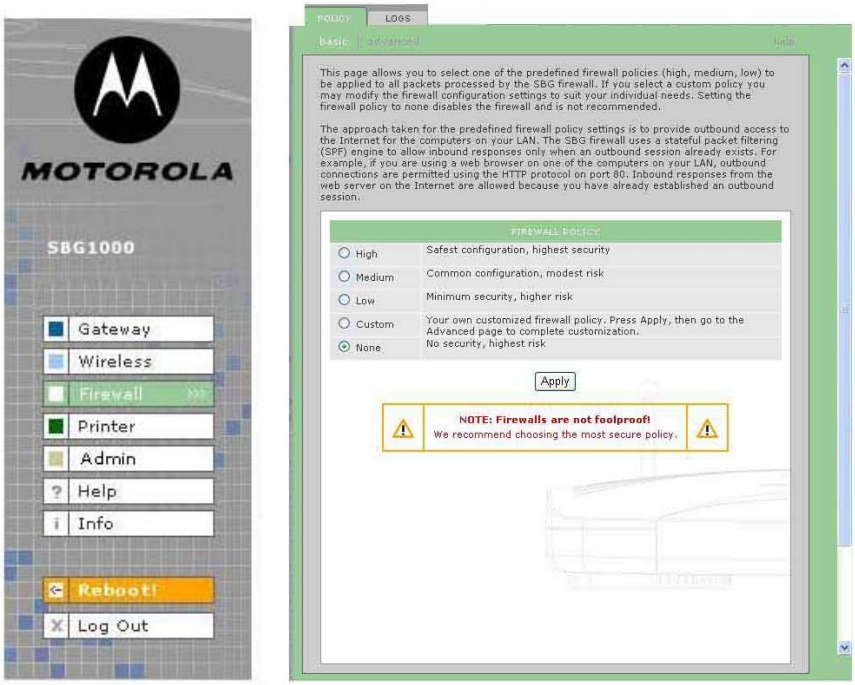
1 On the SBG1000 Setup Program left panel, click **Firewall**.

2 Select the level of protect you require.

3 Click **Custom** to customize your firewall policy

Caution!

Firewalls are not foolproof. Choose the most secure firewall policy you can. To enable easy network setup, the default firewall policy is Low, which provides minimum security.


MOTOROLA
SBG1000
Gateway
Wireless
Firewall
Printer
Admin
Help
Info
Reboot!
Log Out
POLICY
LOGS
BASIC
ADVANCED
HELP
This page allows you to select one of the predefined firewall policies (high, medium, low) to be applied to all packets processed by the SBG firewall. If you select a custom policy you may modify the firewall configuration settings to suit your individual needs. Setting the firewall policy to none disables the firewall and is not recommended.
The approach taken for the predefined firewall policy settings is to provide outbound access to the Internet for the computers on your LAN. The SBG firewall uses a stateful packet filtering (SPF) engine to allow inbound responses only when an outbound session already exists. For example, if you are using a web browser on one of the computers on your LAN, outbound connections are permitted using the HTTP protocol on port 80. Inbound responses from the web server on the Internet are allowed because you have already established an outbound session.
FIREWALL POLICY
High
Safest configuration, highest security
Medium
Common configuration, modest risk
Low
Minimum security, higher risk
Custom
Your own customized firewall policy. Press Apply, then go to the Advanced page to complete customization.
None
No security, highest risk
Apply
NOTE: Firewalls are not foolproof!
We recommend choosing the most secure policy.

4 Select *one* of the following. *Unless you have the necessary expertise and need to setup a custom firewall, use High, Medium, or Low*:

5 Click **Apply** to apply your changes.

High Safest configuration, highest security.
Medium Common configuration, modest risk
Low Minimum security, higher risk
Custom You can create a custom firewall policy on the advanced Page. *Do not create a custom policy unless you have the necessary expertise and the need to do so.*
None This setting disables the firewall and provides no security. *We do not recommend this setting*.

Firewall Pages in the SBG1000 Setup Program

Use the following pages to configure the firewall:

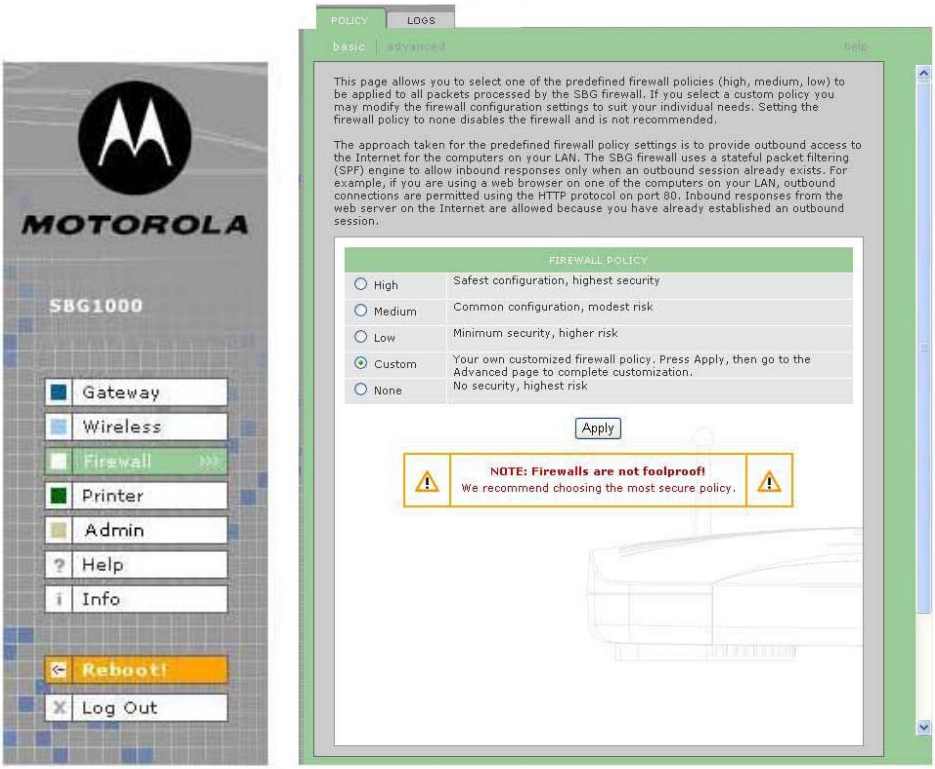
- Firewall — basic Page
- Firewall — advanced Page
- Firewall > LOGS Page

*For some settings, after you edit the field and click Apply, you are warned that you must **Reboot** for your changes to take effect. Rebooting takes 10 to 15 seconds. After rebooting, you must login again.*

Firewall — basic Page

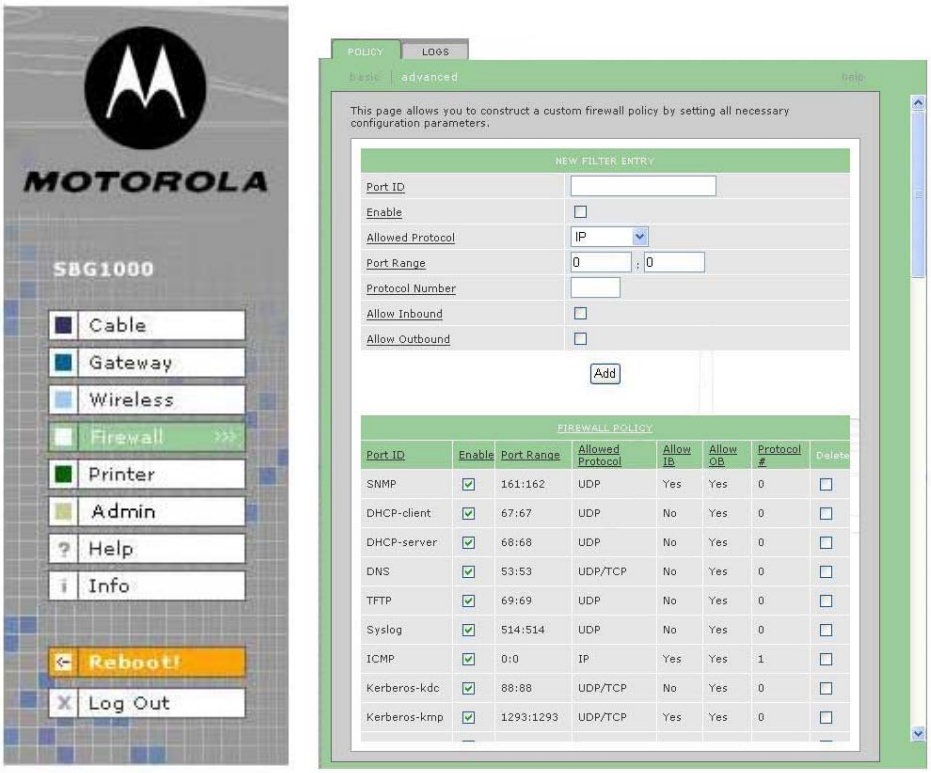
Use this page to select a predefined firewall policy for all packets processed by the SBG1000 firewall, as described in "Setting the Firewall Policy" . Advanced users *only* can create a custom policy. The FIREWALL setting None disables the firewall and provides no security. The predefined policies provide outbound Internet access for computers on the SBG1000 LAN.

The SBG1000 firewall uses stateful inspection to allow inbound responses when there already is an outbound session running corresponding to the data flow. For example, if you use a web browser, outbound HTTP connections are permitted on port 80. Inbound responses from the Internet are allowed because an outbound session is established. When required, the SBG1000 firewall can be configured to allow inbound packets without first establishing an outbound session.


MOTOROLA
SBG1000
Gateway
Wireless
Firewall
Printer
Admin
Help
Info
Reboot!
Log Out
POLICY
LOGS
basic
advanced
help
This page allows you to select one of the predefined firewall policies (high, medium, low) to be applied to all packets processed by the SBG firewall. If you select a custom policy you may modify the firewall configuration settings to suit your individual needs. Setting the firewall policy to none disables the firewall and is not recommended.
The approach taken for the predefined firewall policy settings is to provide outbound access to the Internet for the computers on your LAN. The SBG firewall uses a stateful packet filtering (SPF) engine to allow inbound responses only when an outbound session already exists. For example, if you are using a web browser on one of the computers on your LAN, outbound connections are permitted using the HTTP protocol on port 80. Inbound responses from the web server on the Internet are allowed because you have already established an outbound session.
FIREWALL POLICY
High
Safest configuration, highest security
Medium
Common configuration, modest risk
Low
Minimum security, higher risk
Custom
Your own customized firewall policy. Press Apply, then go to the Advanced page to complete customization.
None
No security, highest risk
Apply
NOTE: Firewalls are not foolproof!
We recommend choosing the most secure policy.

Firewall > POLICY — advanced Page

Use this page to construct a custom firewall policy.


MOTOROLA
SBG1000
Cable
Gateway
Wireless
Firewall
Printer
Admin
Help
Info
Reboot!
Log Out
POLICY
LOGS
basic | advanced
help
This page allows you to construct a custom firewall policy by setting all necessary configuration parameters.
NEW FILTER ENTRY
Port ID
Enable
Allowed Protocol
IP
Port Range
0 : 0
Protocol Number
Allow Inbound
Allow Outbound
Add
FIREWALL POLICY
Port ID | Enable | Port Range | Allowed Protocol | Allow IB | Allow OB | Protocol # | Delete
SNMP | 161:162 | UDP | Yes | Yes | 0
DHCP-client | 67:67 | UDP | No | Yes | 0
DHCP-server | 68:68 | UDP | No | Yes | 0
DNS | 53:53 | UDP/TCP | No | Yes | 0
TFTP | 69:69 | UDP | No | Yes | 0
Syslog | 514:514 | UDP | No | Yes | 0
ICMP | 0:0 | IP | Yes | Yes | 1
Kerberos-kdc | 88:88 | UDP/TCP | No | Yes | 0
Kerberos-kmp | 1293:1293 | UDP/TCP | Yes | Yes | 0

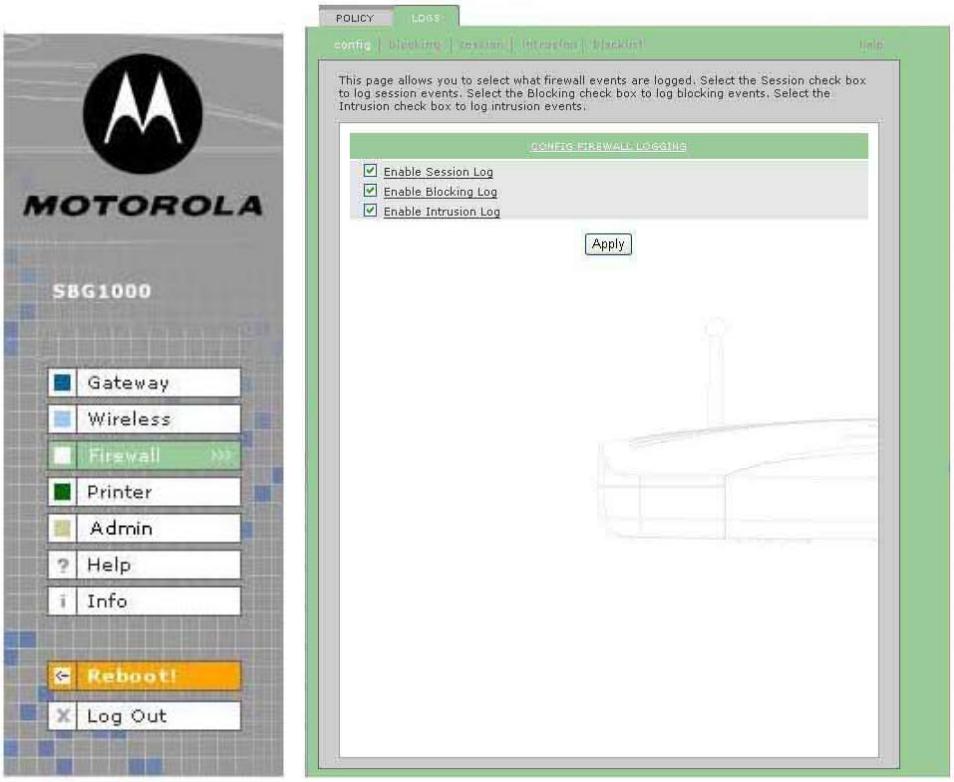
Firewall > POLICY — advanced page fields

Field Description

Port ID The name of the protocol being filtered.
Enable Check this box to enable firewall policy filtering for the port.
Allowed Protocol The allowed protocols.
Port Range (From:To)
Sets the from and to port range, which must contain all ports required by the protocol.
Protocol # The protocol number associated with the IP packets to allow in the firewall policy.
Allow IB (Inbound) Filters inbound data from the Internet on the specified ports.
Allow OB (Outbound) Filters outbound data to the Internet on the specified ports. Stateful inspection ensures appropriate responses for outbound sessions.

Firewall > LOGS Page

Use this page to set which firewall events are logged.



Firewall > LOGS page fields

Field or Button Description

Enable Session Log Check this box to log session events.
Enable Blocking Log Check this box to log blocking events.
Enable Intrusion Log Check this box to log intrusions.
Apply Click to apply your changes.

Configuring the Print Server

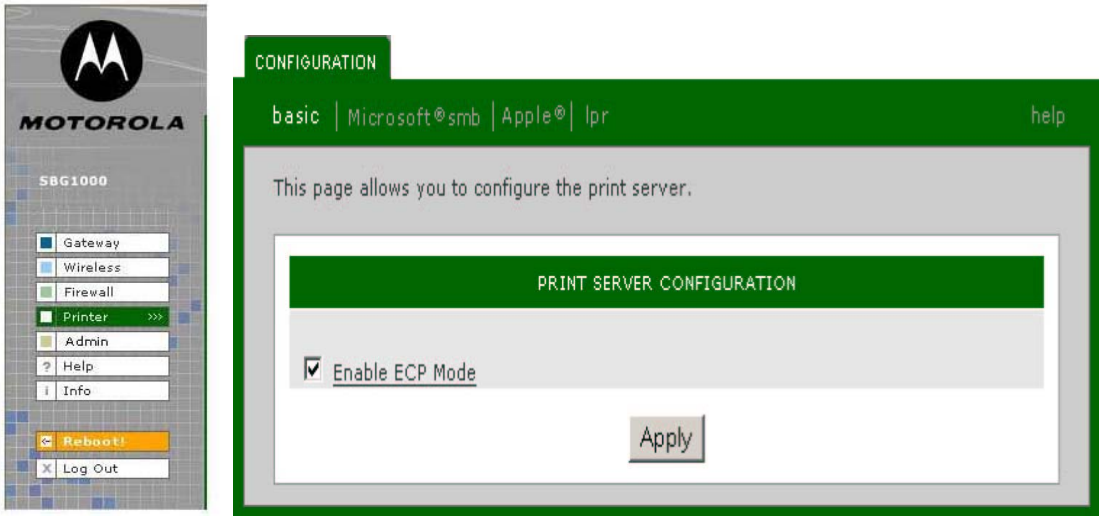
The SBG1000 print server supports a printer connected to its printer port using Microsoft, UNIX (Linux), or Apple
printing. Configuring printing consists of:

- Configuring the SBG1000 Print Server
- Connecting the printer to the SBG1000 as shown in "Installation"
- Adding a printer to each PC following *one* of:

— "Adding a Printer in Windows 98 or Windows Me"
— "Adding a Printer in Windows 2000"

Configuring the SBG1000 Print Server

1 Start the SBG1000 Setup Program as described in "Starting the SBG1000 Setup Program"
2 On the left frame, click Printer to display the Printer CONFIGURATION > basic page:



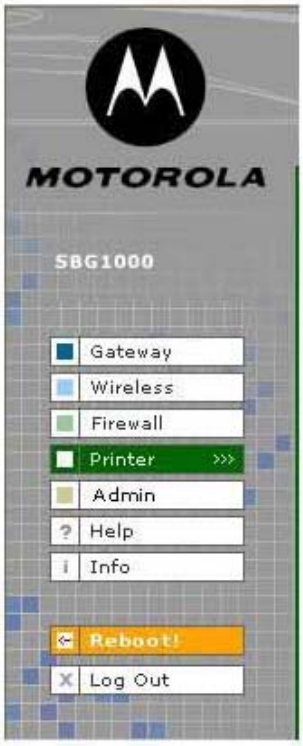
3 (Optional) For a printer that supports bi-directional communication, you can enable Extended Capabilities Port (ECP) Mode, which can provide a performance benefit over a standard port.
4 Use the following pages to configure the print server for the necessary platform(s):
5 Power off the SBG1000.
6 Connect the printer to the printer port on the SBG1000 Rear Panel as shown in "Installation" .
7 Power on the printer.
8 Power on the SBG1000. If printer configuration was successful, the printer icon displays on the SBG1000 front panel. If the printer icon is not displayed, check the printer cable connection and power the printer and the SBG1000 off and on again. Verify that Enable printer is checked on the Printer CONFIGURATON > basic page.

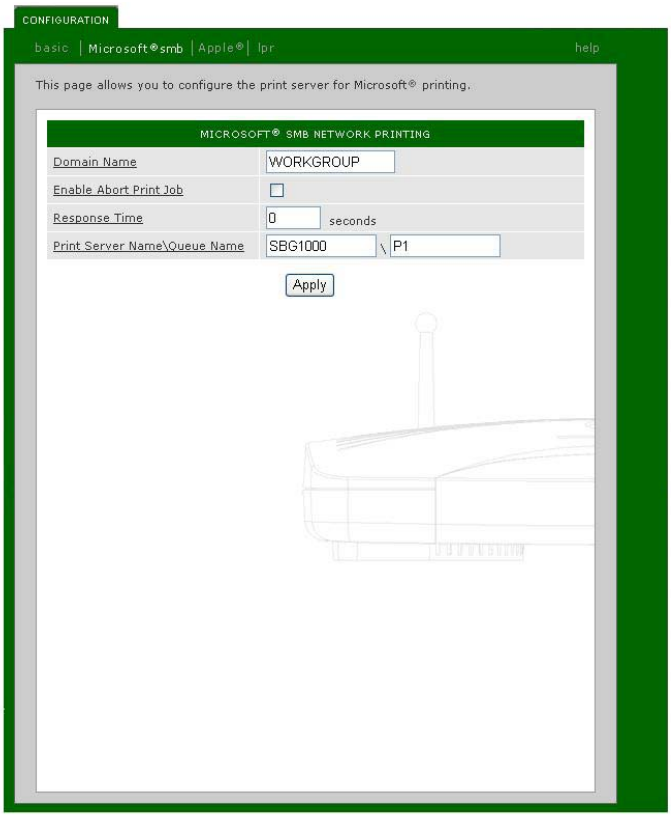
Windows Printer > CONFIGURATION — Microsoft smb Page
Macintosh Printer > CONFIGURATION — Apple Page
UNIX (Linux) Printer > CONFIGURATION — lpr Page

Configuring Printer > Configuration – Microsoft SMB

You can configure the Print server for Microsoft SMB

1 On the left frame, click **Printer**.
2 Click the **Microsoft SMB** tab.





Field or Button Description

Domain Name
Enter the domain (or workgroup) name used for Microsoft SMB printing. If you provide a domain (or workgroup) name you can use the Microsoft Network neighborhood to select the SBG network print server for your print jobs. When you subsequently submit your print job, it will automatically go to the SBG network print server you selected from Microsoft Network neighborhood.

Enable Abort Print Job
Enable abort print job when you want any print jobs submitted to your printer to abort if the printer runs out of paper. When abort print job is disabled, the print server will not resume printing your print job until you have resolved the printer out of paper condition.

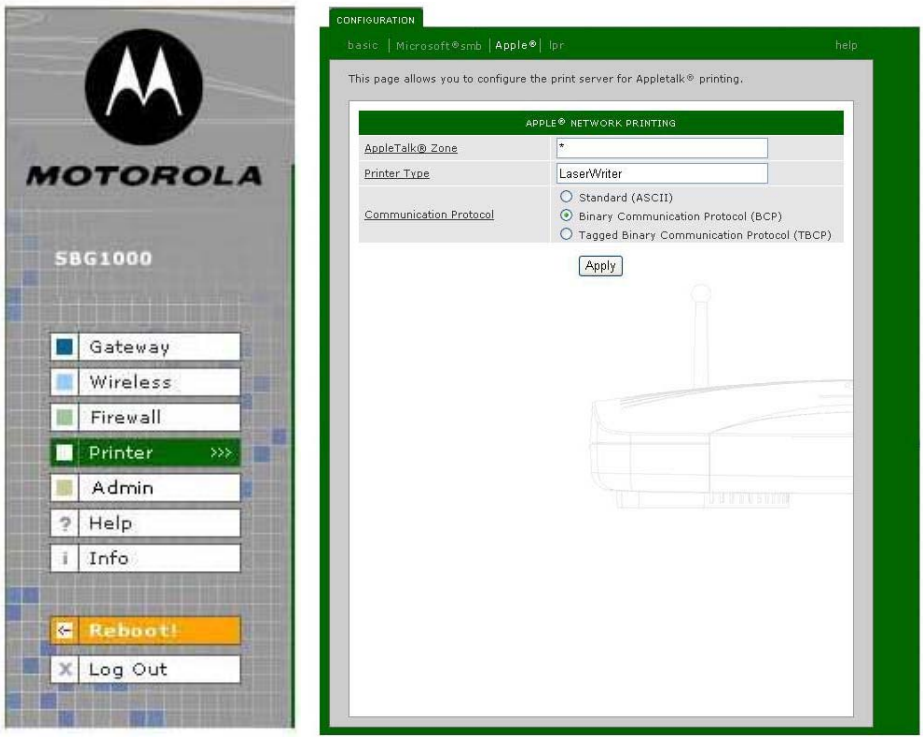
Response Time
Enter the response time value if you have a need to slow down the response to a Microsoft® SMB client for a legacy printer with a slow printing speed.

Print Server Name\Queue Name
Enter a name for your SMB printer. The print server name must match your Windows CPE printer configuration.

Configuring Printer > Configuration – Apple

You can configure the Print server for Apple.

1 On the left frame, click **Printer**.
2 Click the **Apple** tab.



Field or Button Description

AppleTalk Zone
Enter the name of the AppleTalk zone that you want to have access to the print server printer(s). Entering "*" allows all AppleTalk zones to access the print server printer(s). The AppleTalk zone name can be up to 32 characters long

Printer Type
Enter the printer type that you are configuring for use on your network. LaserWriter is the default printer type and it is used to support most AppleTalk printers. If you have an Epson printer that supports AppleTalk, it will have a different printer type, found in the Epson printer manual or Epson web site. Note: The SBG print server only responds to the MAC Chooser when both the Appletalk zone and printer type match

Communication Protocol
Standard - Enable Standard if your printer uses a communication protocol that supports sending and receiving ASCII data. The Standard protocol is typically supported on devices using RS-232 and centronics channels.

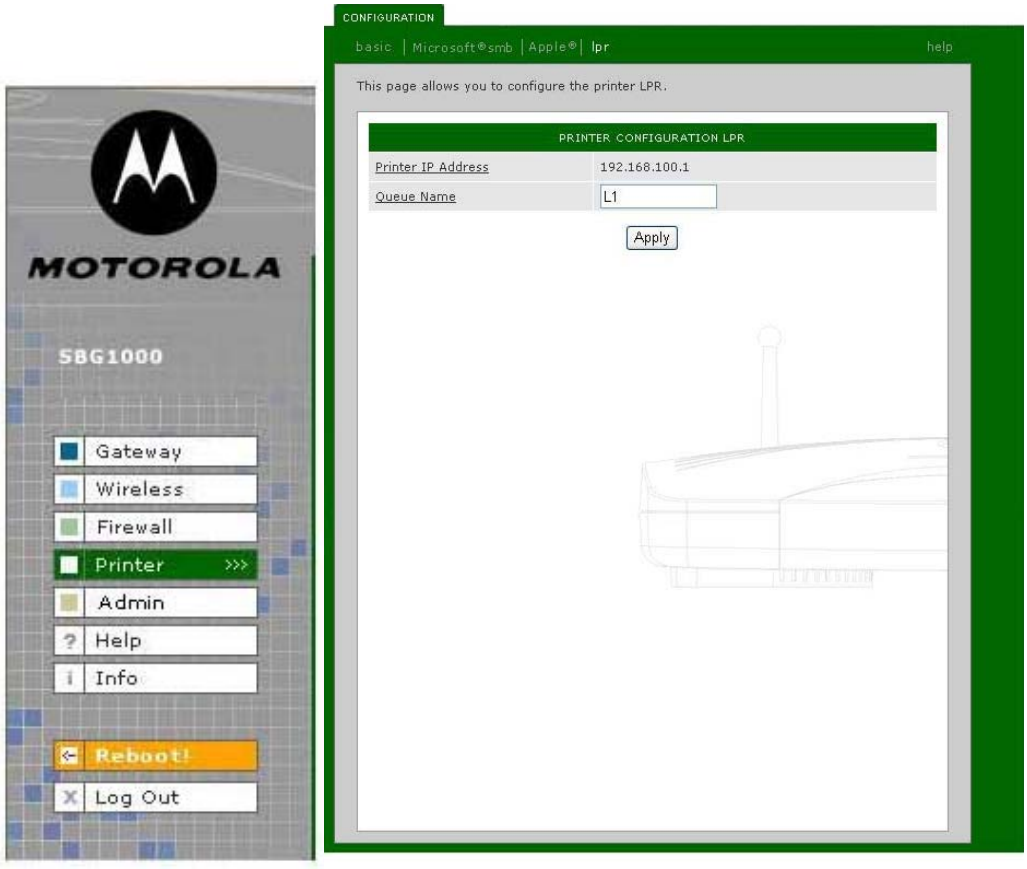
Binary Communication Protocol - Enable Binary Communication Protocol (BCP) if your printer supports sending and receiving of binary data. The BCP is a device dependent feature used by some devices to provide flow control, status request, abort job, and end of file functions. Note: The BCP can result in a significant performance advantage over ASCII printing on serial and parallel ports.

Tagged Binary Communication Protocol - Enable Tagged Binary Communication Protocol (TBCP) if your printer contains a language independent feature that determines which language will interpret an incoming printer job. The TBCP is also a device dependent feature and is typically supported by printers that use the Hewlett Packard Printer Job Language (PJL).

Configuring Printer > Configuration – LPR

You can configure the Print server for LPR

1 On the left frame, click **Printer**.
2 Click the **LPR** tab.



Field or Button Description

Printer IP address
This is the IP address for the printer on your LAN. This is the same IP address that has been assigned to the SBG on your LAN.

Queue Name
Enter the queue name of the print server.

Setting Up a USB Driver

The following subsections describe setting up a USB driver if you connect a PC to the USB port on the SBG1000.

Setting Up a USB Driver in Windows 98

Be sure the Motorola SBG1000 Wireless Cable Modem Gateway CD-ROM is inserted in the CD-ROM drive before you plug in the USB cable. This CD contains the USB drivers and must be inserted and read by the PC before you connect the SBG1000 to the PC.

A few seconds after you complete the USB connection, the Add New Hardware Wizard window is displayed:

Add New Hardware Wizard
This wizard searches for new drivers for:
USB Composite Device
A device driver is a software program that makes a hardware device work.
< Back
Next >
Cancel

1 Click **Nex**t. The following window is displayed:

Add New Hardware Wizard
What do you want Windows to do?
Search for the best driver for your device. (Recommended).
Display a list of all the drivers in a specific location, so you can select the driver you want.
< Back
Next >
Cancel

Be sure “Search for the best driver for your device” is selected..

2 Click **Nex**t. The following window is displayed:

Add New Hardware Wizard
Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search.
Floppy disk drives
CD-ROM drive
Microsoft Windows Update
Specify a location:
D:\net3cusb.inf
Browse...
< Back
Next >
Cancel

Be sure CD-ROM drivel is the only box checked.

3 Click **Nex**t. The message Please wait while Windows searches for a new driver for this devicels is displayed.

If the computer successfully locates the driver, you can skip to step 6.

If the computer does not locate the driver, the previous window is displayed again.

4 Select **Specify a location** and type the location of the CD-ROM drive:

Add New Hardware Wizard
Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search.
Floppy disk drives
CD-ROM drive
Microsoft Windows Update
Specify a location:
D:\
Browse...
< Back
Next >
Cancel

To load the driver successfully, you may need to click **Browse** to manually select the NetMotCM.sys file on the CD-ROM..

5 Click **Nex**t.The following window is displayed:

Add New Hardware Wizard
Windows has found an updated driver for this device, and also some other drivers that should work with this device.
What do you want to install?
The updated driver [Recommended]
Motorola SurfBoard SBG1000 USB Gateway
One of the other drivers.
View List...
< Back
Next >
Cancel

6 Select **The updated driver...** and click **Next.** If the following window is not displayed, verify that the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM is properly inserted in the CD-ROM drive. If you still cannot find the correct driver file, click **Cancel** to cancel the installation and perform the procedure for Removing the USB Driver from Windows 98 or Windows Me. Then repeat this procedure.

Add New Hardware Wizard
Windows driver file search for the device:
Motorola SurfBoard SBG1000 USB Gateway
Windows is now ready to install the best driver for this device. Click Back to select a different driver, or click Next to continue.
Location of driver:
D:\NETMOTCM.INF
< Back
Next >
Cancel

7 After the window shown under step 6 is displayed, click **Nex**t.

If a window with the message *Copying Files...* displays and asks for the CD-ROM drive, type the CD-ROM drive *letter* (for example, D) and click **O**K.

If an Insert Disk window similar to the one below is displayed, Windows 98 system files are needed to complete the installation. To install the files, insert your Windows 98 CD-ROM in the CD-ROM drive and click **O**K.

After all the necessary files are loaded, the following window is displayed to confirm a successful installation:

Add New Hardware Wizard
Motorola SurfBoard SBG1000 USB Gateway
Windows has finished installing the software that your new hardware device requires.
< Back
Finish
Cancel

8 Click **Finish.** The Systems Settings Change window is displayed:

System Settings Change
To finish setting up your new hardware, you must restart your computer.
Do you want to restart your computer now?
Yes
No

9 Click **Yes** to restart the computer.

When you finish setting up the USB driver, you can continue with Configuring TCP/IP.
If you have difficulties setting up the USB driver, perform Removing the USB Driver from Windows 98 or Windows Me and repeat this procedure.

Setting Up a USB Driver in Windows 2000

Be sure the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM is inserted into the CD-ROM drive before you plug in the USB cable. A few seconds after you complete the USB connection, the Found New Hardware window is displayed:

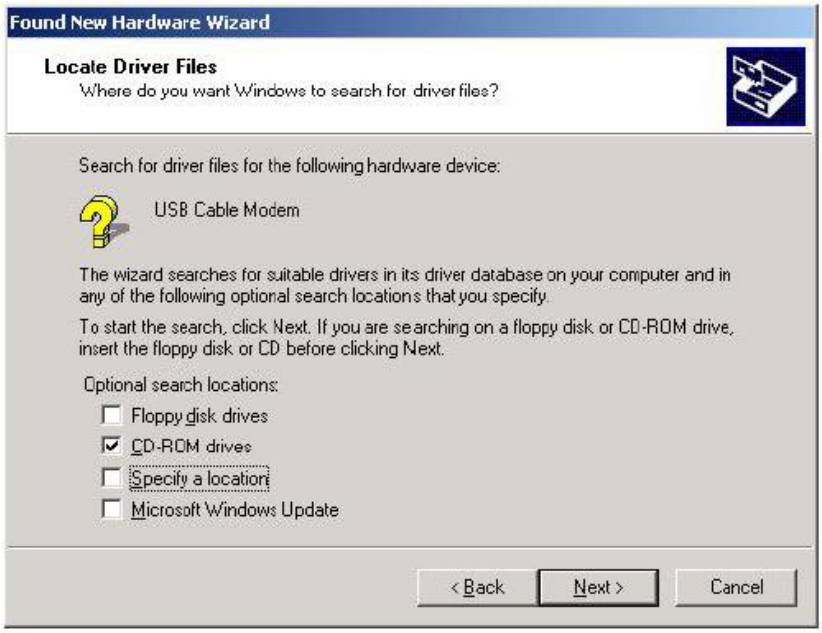
Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install a device driver for a hardware device.
To continue, click Next.
< Back
Next >
Cancel

1 Click **Nex**t. The following window is displayed:

Found New Hardware Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard will complete the installation for this device:
USB Cable Modem
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.
What do you want the wizard to do?
Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel

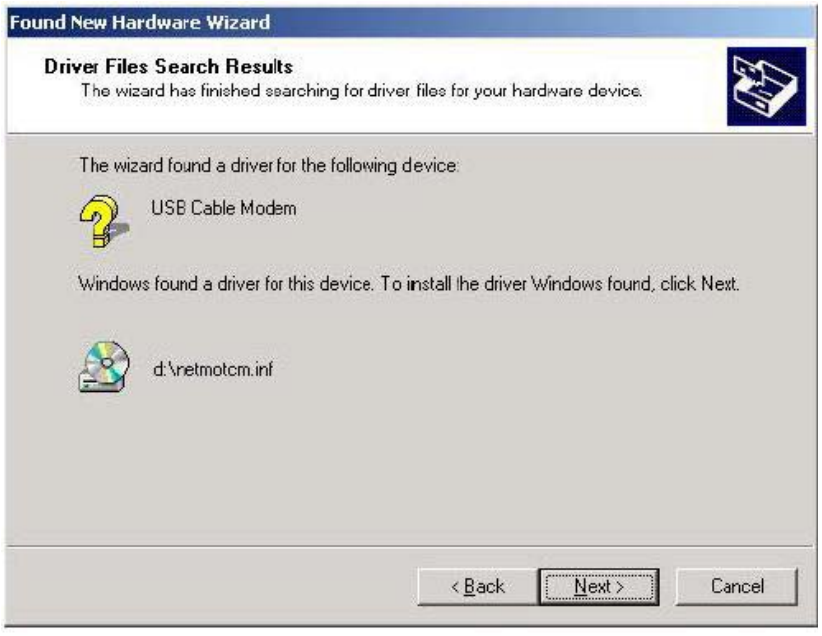
Be sure Search for a suitable driver for my devicele is selected.

2 Click **Nex**t. The following window is displayed:


Found New Hardware Wizard
Locate Driver Files
Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
USB Cable Modem
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations:
Floppy disk drives
CD-ROM drives
Specify a location
Microsoft Windows Update
< Back
Next >
Cancel

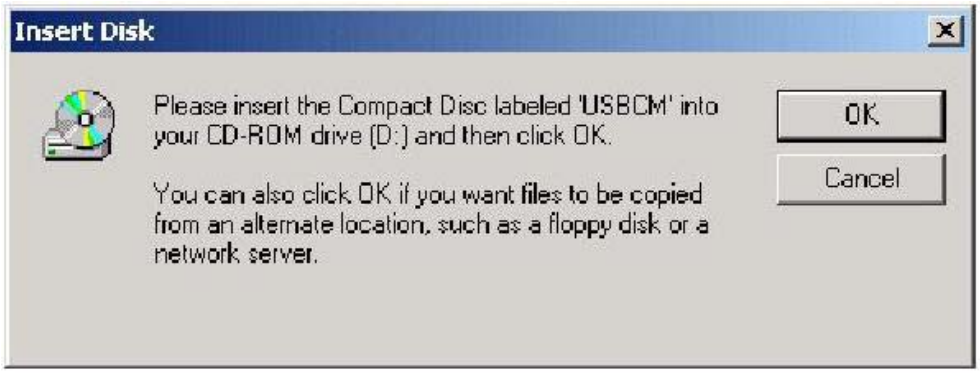
Be sure CD-ROM drives is the only box checked.

3 Click **Nex**t. The following window is displayed:

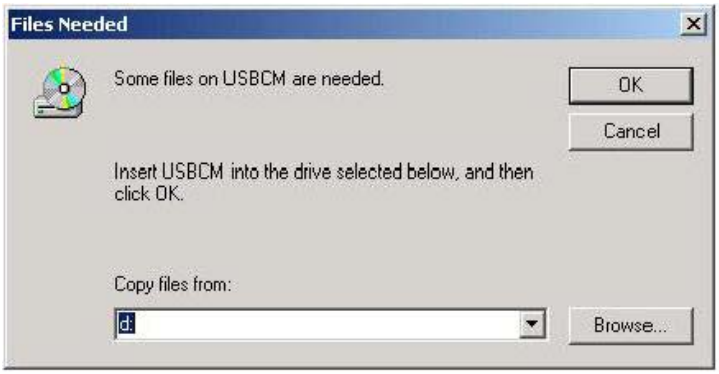

Found New Hardware Wizard
Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
USB Cable Modem
Windows found a driver for this device. To install the driver Windows found, click Next.
d:\retmotcm.inf
< Back
Next >
Cancel

4 Click **Nex**t.

If the Insert Disk window is displayed, be sure the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM is in the CD-ROM drive and follow steps 5 to 10. Otherwise, you can skip to step 11..


Insert Disk
Please insert the Compact Disc labeled 'USBCM' into your CD-ROM drive (D:) and then click OK.
You can also click OK if you want files to be copied from an alternate location, such as a floppy disk or a network server.
OK
Cancel

5 On the Insert Disk window, click **O**K. The Files Needed window is displayed:



6 If necessary, select the CD-ROM drive in the Copy files from list.

7 Click **Browse**.

8 Locate the NetMotCM.sys file in the CD-ROM root directory.

9 Double-click the **NetMotCM.sys** file. The Files Needed window is displayed.

10 Click **O**K. The Found New Hardware Wizard window is displayed:

Found New Hardware Wizard
Completing the Found New Hardware Wizard
Motorola SurfBoard SBG1000 USB Gateway
Windows has finished installing the software for this device.
To close this wizard, click Finish.
< Back
Finish
Cancel

11 Click **Finish** to complete the installation.

When you finish setting up the USB driver, you can continue with Configuring TCP/IP on page 57.
If you have any difficulties setting up the USB driver, perform Removing the USB Driver from Windows 2000 and repeat this procedure..

Setting Up a USB Driver in Windows Me

Be sure the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM is inserted into the CD-ROM drive before you plug in the USB cable. A few seconds after you complete the USB connection, the Add New Hardware Wizard window is displayed:

Add New Hardware Wizard
Windows has found the following new hardware:
USB Cable Modem
Windows can automatically search for and install software that supports your hardware. If your hardware came with installation media, insert it now and click Next.
What would you like to do?
Automatic search for a better driver (Recommended)
Specify the location of the driver (Advanced)
< Back
Next >
Cancel

1 Click **Nex**t. Windows automatically searches for the correct USB drivers and installs them. If the installation is successful, the following window is displayed:

2 If the window above is displayed, click **Finis**h. Otherwise, be sure the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM is correctly inserted in the CD-ROM drive.
When you finish setting up the USB driver, you can continue with Configuring TCP/IP

Setting Up a USB Driver in Windows XP

Be sure the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM is inserted into the CD-ROM drive before you plug in the USB cable. A few seconds after you complete the USB connection, the Found New Hardware Wizard window is displayed:

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
USB Cable Modem
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

1 Be sure Install the software automatically is selected.

2 Click **Next**. Windows automatically searches for the correct USB drivers and installs them. If the installation is successful, the following window is displayed:

Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
Motorola SurfBoard SBG1000 USB Gateway
Click Finish to close the wizard.
< Back
Finish
Cancel

3 Click **Finish** to complete the installation. Otherwise, be sure the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM is correctly inserted in the CD-ROM drive.
When you finish setting up the USB driver, you can continue with Configuring TCP/IP.

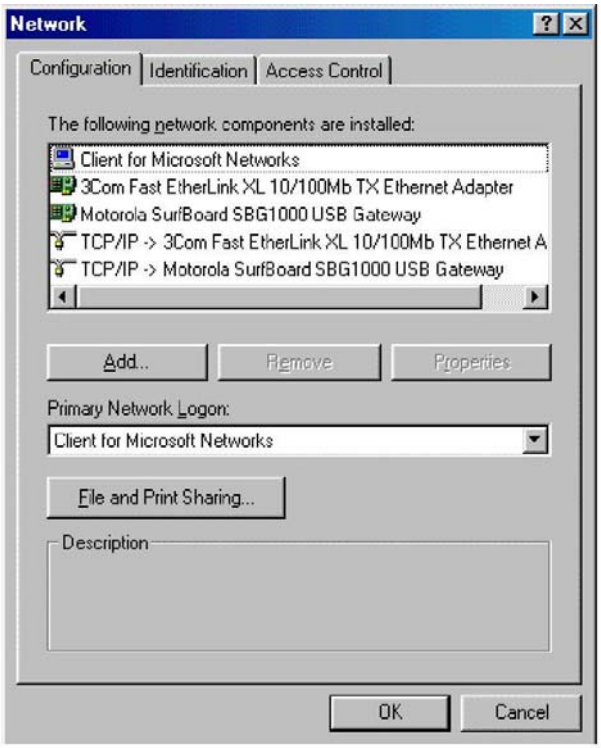
Removing the USB Driver from Windows 98 or Windows Me

1 On the Windows Desktop, right-click *one* of:

In Windows 98, the **Network Neighborhood** icon

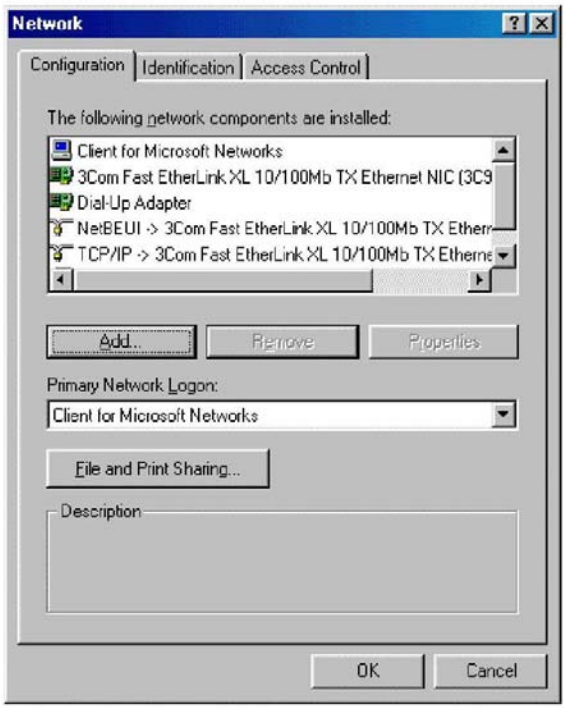
In Windows ME, the **My Network Places** icon

The Network window is displayed:



2 Click the **Motorola SurfBoard SBG1000 USB Gatewa**y.

3 Click **Remove.** The Network window no longer displays Motorola SurfBoard SBG1000 USB Gateway in the list:



4 Click **O**K. The System Settings Change window is displayed:

System Settings Change
To finish setting up your new hardware, you must restart your computer.
Do you want to restart your computer now?
Yes
No

5 *Disconnect the USB cable from the PC or SBG1000.*

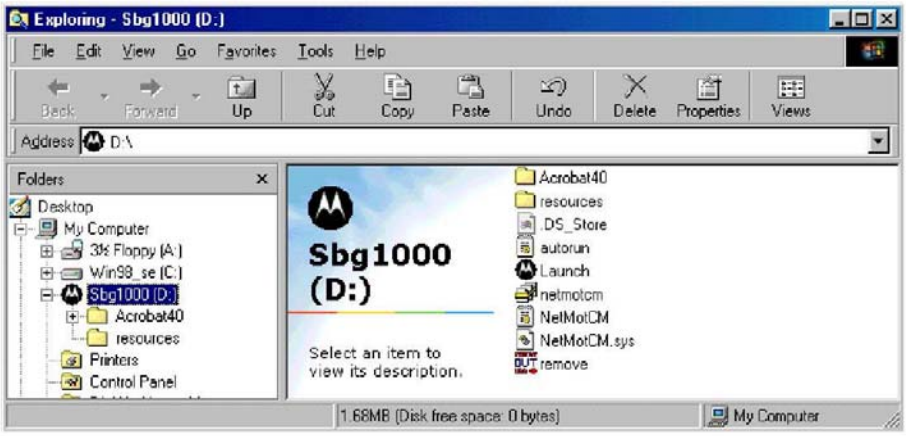
6 Click **Yes** to restart the computer.

7 Insert the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM in the CD-ROM drive. After a short time, a window with language choices is displayed.

8 Press the **Esc** key on the keyboard to exit the start-up screens.

9 To start Windows Explorer, click **Start** and select **Run..**

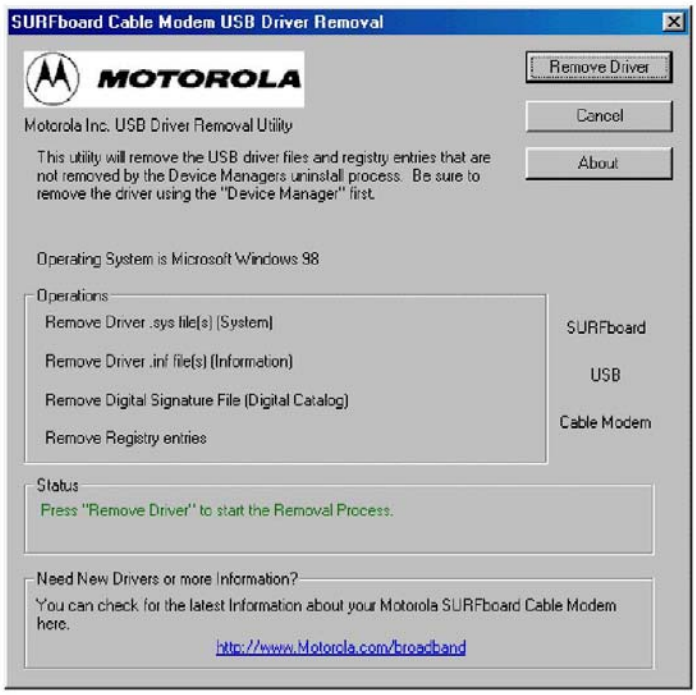
10 In the Run window, type **explorer** and click **OK.** The Exploring window is displayed:



Windows Explorer may appear different than in the image. There are variations between Windows versions and you can configure Windows Explorer as you like.

11 Double-click the **Motorola SBG1000** CD-ROM drive (D: in the image above).

12 Double-click **remove** or **remove.exe** to run the Remove utility from the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM. The SURFboard Cable Modem USB Driver Removal window is displayed:


SURFboard Cable Modem USB Driver Removal
MOTOROLA
Remove Driver
Cancel
About
Motorola Inc. USB Driver Removal Utility
This utility will remove the USB driver files and registry entries that are not removed by the Device Managers uninstall process. Be sure to remove the driver using the "Device Manager" first.
Operating System is Microsoft Windows 98
Operations
Remove Driver .sys file(s) (System)
Remove Driver .inf file(s) (Information)
Remove Digital Signature File (Digital Catalog)
Remove Registry entries
SURFboard
USB
Cable Modem
Status
Press "Remove Driver" to start the Removal Process.
Need New Drivers or more Information?
You can check for the latest Information about your Motorola SURFboard Cable Modem here.
http://www.Motorola.com/broadband

13 Click **Remove Drive**r.

After you remove the USB driver, re-install it on the computer:

Setting Up a USB Driver in Windows 98
Setting Up a USB Driver in Windows Me

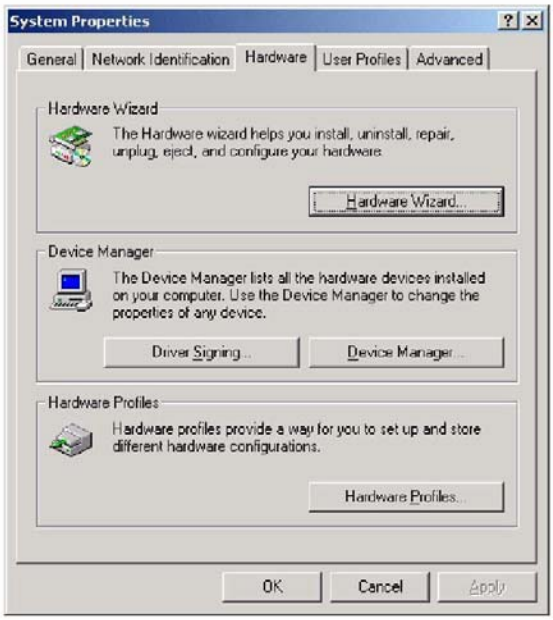
Removing the USB Driver from Windows 2000

1 On the Windows desktop, click **Start**.

2 Click **Settings**.

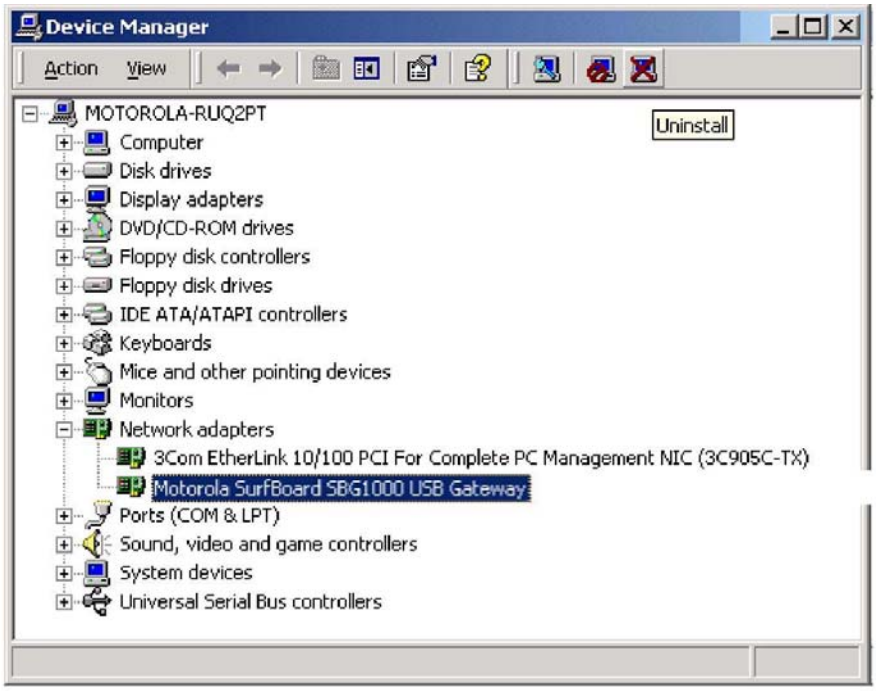
3 Click **Control Panel** to display the Control Panel window:

4 Double-click **System** to display the System Properties window:.


System Properties
General
Network Identification
Hardware
User Profiles
Advanced
Hardware Wizard
The Hardware wizard helps you install, uninstall, repair, unplug, eject, and configure your hardware.
Hardware Wizard...
Device Manager
The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device.
Driver Signing...
Device Manager...
Hardware Profiles
Hardware profiles provide a way for you to set up and store different hardware configurations.
Hardware Profiles...
OK
Cancel
Apply

5 On the System Properties window, click the **Hardware** tab.

6 Click the **Device Manager** button to display the Device Manager window:



7 On the Device Manager window, double-click **Network Adapter**s.

8 Click the **Motorola SurfBoard SBG1000 USB Gatewa**y. The Uninstall icon displays on the window near the top.

9 Click the **Uninstall** icon. The following window is displayed:

Confirm Device Removal
Motorola SurfBoard SBG1000 USB Gateway
Warning: You are about to uninstall this device from your system.
OK
Cancel

10 Click **OK**.

11 Close the Device Manager window.

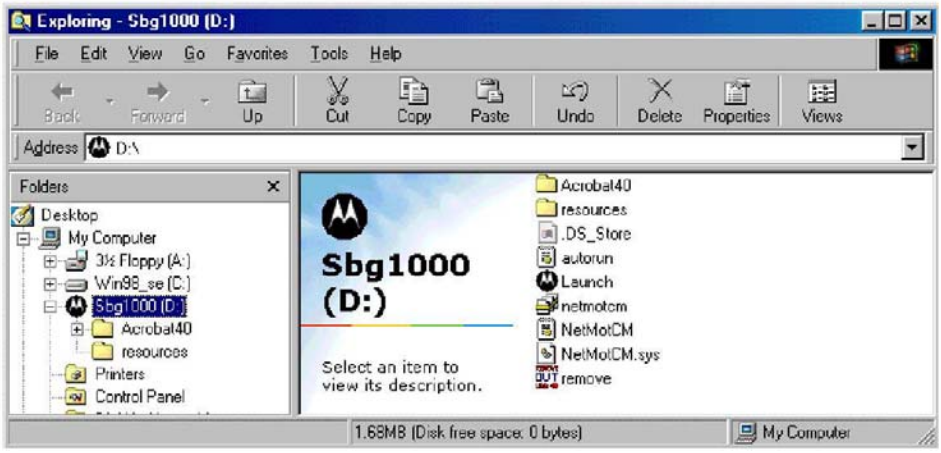
12 Close the Control Panel window.

13 Insert the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM in the CD-ROM drive. After a short time, a window with language choices is displayed.

14 Press the **Esc** key on the keyboard to exit the start-up screens.

15 To start Windows Explorer, click **Start** and select **Run** to display the Run window.

16 On the Run window, type **explorer** and click **OK** to display Windows Explorer:

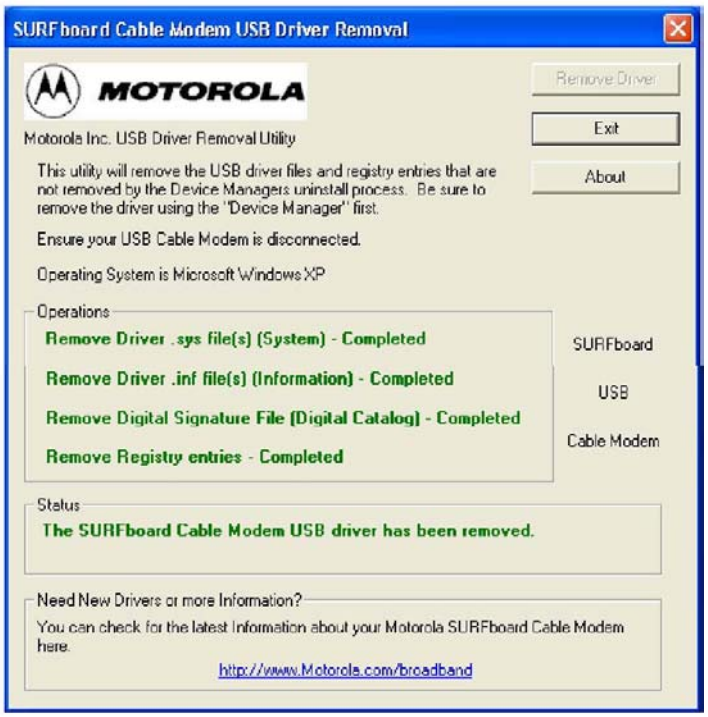


Windows Explorer may appear different than in the image. There are variations between Windows versions and you can configure Windows Explorer as you like.

17 Double-click **My Computer**.

18 Double-click the **Motorola SBG1000** CD icon (D: in the image).

19 Double-click **remove** or **remove.exe** to run the Remove utility from the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM. The SURFboard Cable Modem USB Driver Removal window is displayed:


SURFboard Cable Modem USB Driver Removal
MOTOROLA
Remove Driver
Exit
About
Motorola Inc. USB Driver Removal Utility
This utility will remove the USB driver files and registry entries that are not removed by the Device Managers uninstall process. Be sure to remove the driver using the "Device Manager" first.
Ensure your USB Cable Modem is disconnected.
Operating System is Microsoft Windows XP
Operations
Remove Driver .sys file(s) (System) - Completed
Remove Driver .inf file(s) (Information) - Completed
Remove Digital Signature File (Digital Catalog) - Completed
Remove Registry entries - Completed
SURFboard
USB
Cable Modem
Status
The SURFboard Cable Modem USB driver has been removed.
Need New Drivers or more Information?
You can check for the latest information about your Motorola SURFboard Cable Modem here.
http://www.Motorola.com/broadband

20 *Be sure the USB cable is disconnected.*

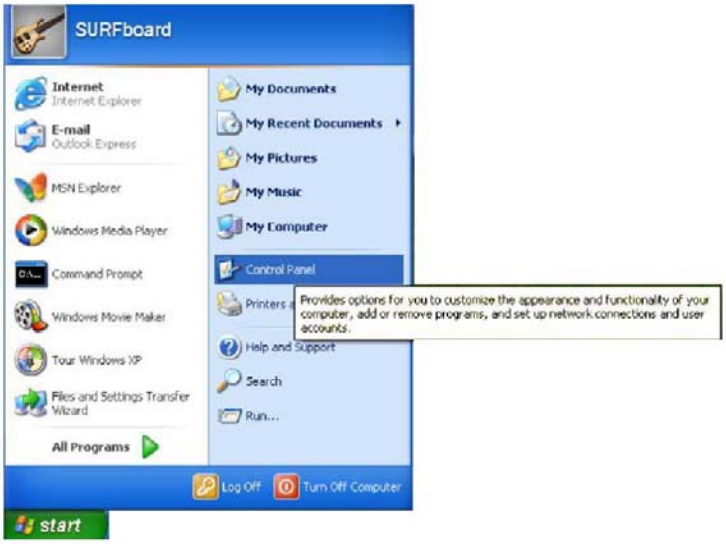
21 Click **Remove Driver.**

Informational messages similar to the ones shown are displayed on the SURFboard Cable Modem USB Driver Removal window.

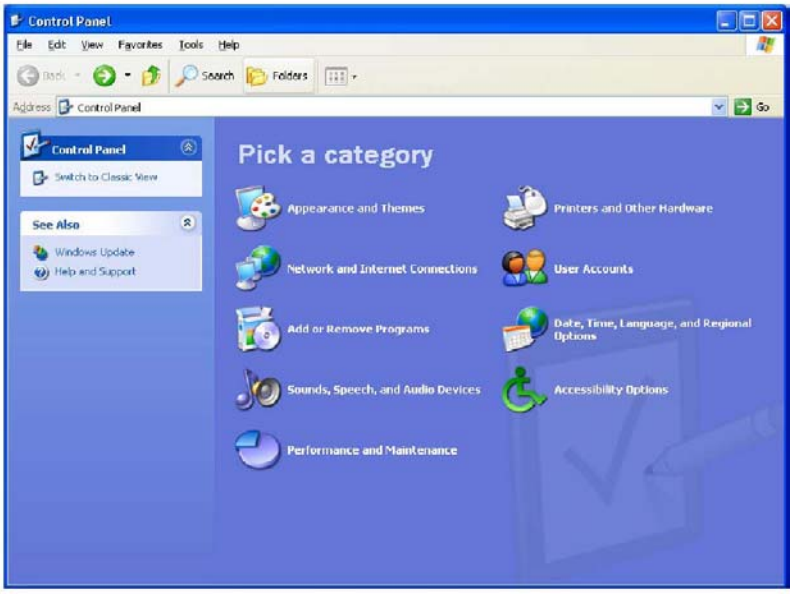
After you remove the USB driver, re-install it following Setting Up a USB Driver in Windows 2000

Removing the USB Driver from Windows XP

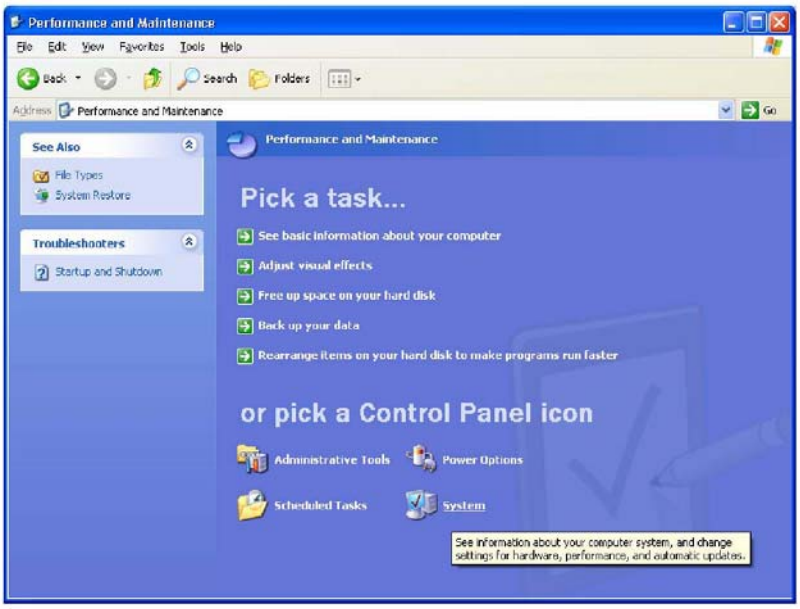
1 On the Windows desktop, click **Start** to display the Start window:



2 Click **Control Panel** to display the Control Panel window. The display varies, depending on the Windows XP view options:.

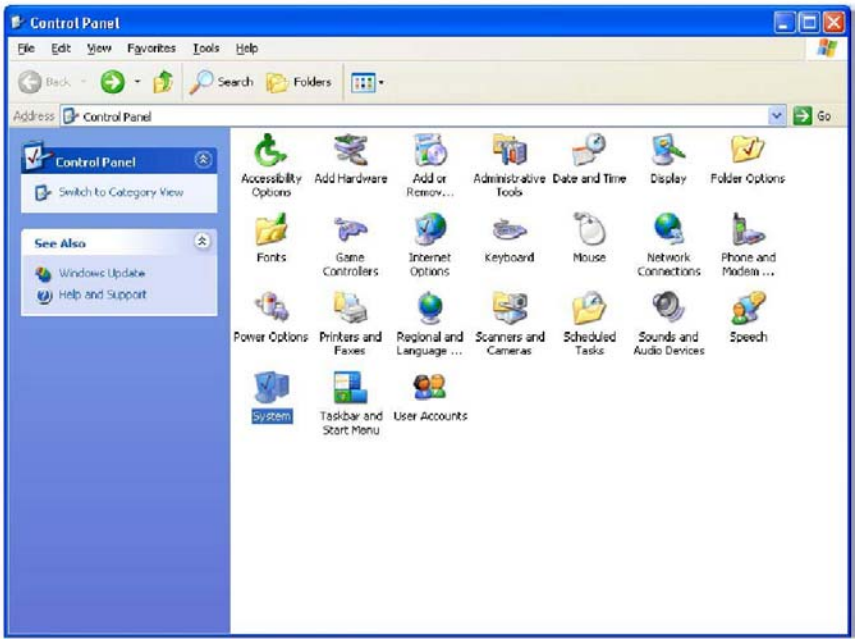


3 If a Category view similar to the image under step 2 is displayed, click **Performance and Maintenance** to display the Performance and Maintenance window. Otherwise, skip to step 5.

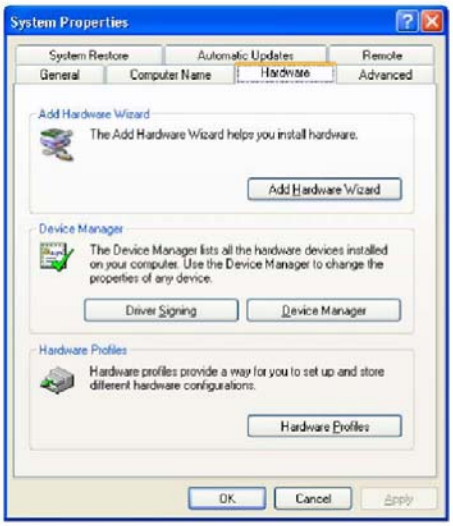

Performance and Maintenance
File Edit View Favorites Tools Help
Back Search Folders
Address Performance and Maintenance
Go
See Also
File Types
System Restore
Troubleshooters
Startup and Shutdown
Performance and Maintenance
Pick a task...
See basic information about your computer
Adjust visual effects
Free up space on your hard disk
Back up your data
Rearrange items on your hard disk to make programs run faster
or pick a Control Panel icon
Administrative Tools
Power Options
Scheduled Tasks
System
See information about your computer system, and change settings for hardware, performance, and automatic updates.

4 Click **System** to display the System Properties window. Skip to step 6..

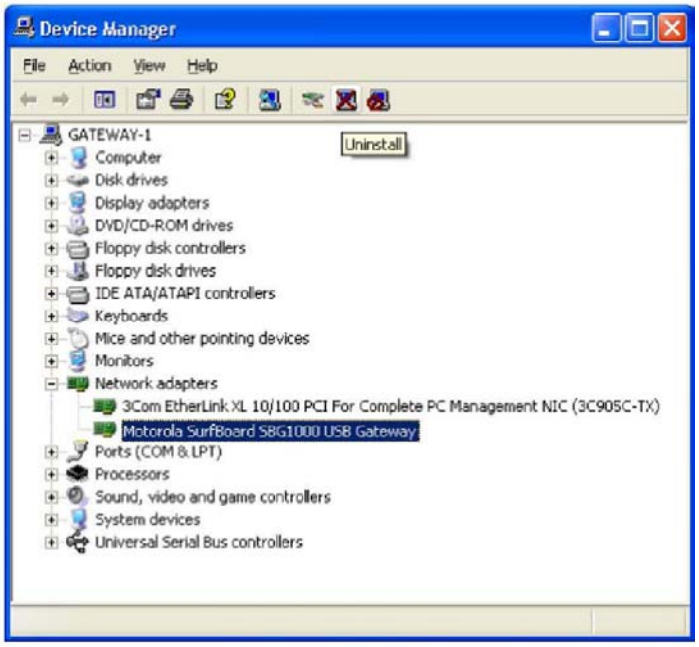
5 If a classic view similar to the following is displayed, click System to display the System Properties window:



6 On the System Properties window, click the **Hardware** tab to display the Hardware page:.



7 Double-click the **Device Manager** button to display the Device Manager window:



8 Double-click **Network adapter**s.

9 Click the **Motorola SurfBoard SBG1000 USB Gatewa**y. The Uninstall icon displays on the window near the top.

10 Click the **Uninstall** icon.

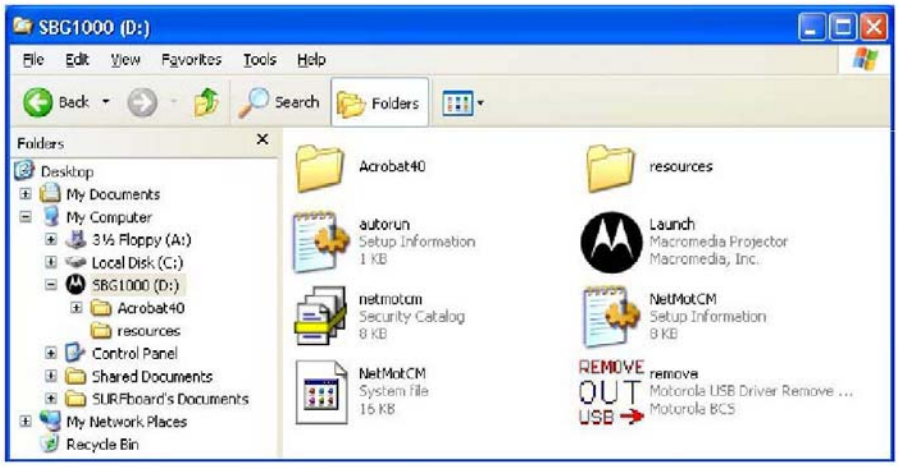
11 Close the Device Manager and Control Panel windows.

12 Insert the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM in the CD-ROM drive. After a short time, a window with language choices is displayed.

13 Press the **Esc** key on the keyboard to exit the start-up screens.

14 To start Windows Explorer, click **Start** and select **Run** to display the Run window.

15 Type **explorer** and click **OK** to display Windows Explorer.

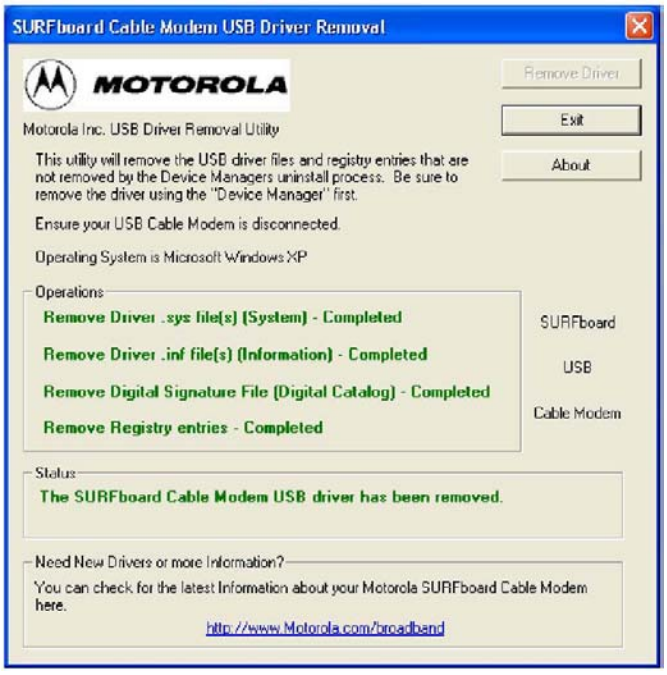


Windows Explorer may appear slightly different than in the image. There are variations between Windows versions and you can configure Windows Explorer as you like.

16 Double-click **My Compute**r.

17 Double-click the **Motorola** CD icon (D: in the image).

18 Double-click **remove** or **remove.exe** to run the Remove utility from the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM. The SURFboard Cable Modem USB Driver Removal window is displayed:


SURFboard Cable Modem USB Driver Removal
MOTOROLA
Remove Driver
Exit
About
Motorola Inc. USB Driver Removal Utility
This utility will remove the USB driver files and registry entries that are not removed by the Device Managers uninstall process. Be sure to remove the driver using the "Device Manager" first.
Ensure your USB Cable Modem is disconnected.
Operating System is Microsoft Windows XP
Operations
Remove Driver .sys file(s) (System) - Completed
Remove Driver .inf file(s) (Information) - Completed
Remove Digital Signature File (Digital Catalog) - Completed
Remove Registry entries - Completed
SURFboard
USB
Cable Modem
Status
The SURFboard Cable Modem USB driver has been removed.
Need New Drivers or more Information?
You can check for the latest Information about your Motorola SURFboard Cable Modem here.
http://www.Motorola.com/broadband

19 Be sure the USB cable is disconnected.

20 Click **Remove Driver.** Informational messages similar to the ones shown are displayed on the SURFboard Cable Modem USB Driver Removal window.

After you remove the USB driver, re-install it following Setting Up a USB Driver in Windows XP.

Getting Help

To get help on any underlined item, field, click the text. For example, if you click a field or the help button on the ADMIN — basic page, the following help is displayed:

Configuring TCP/IP

You must be sure all client computers are configured for TCP/IP (a protocol for communication between computers). Perform *one* of:

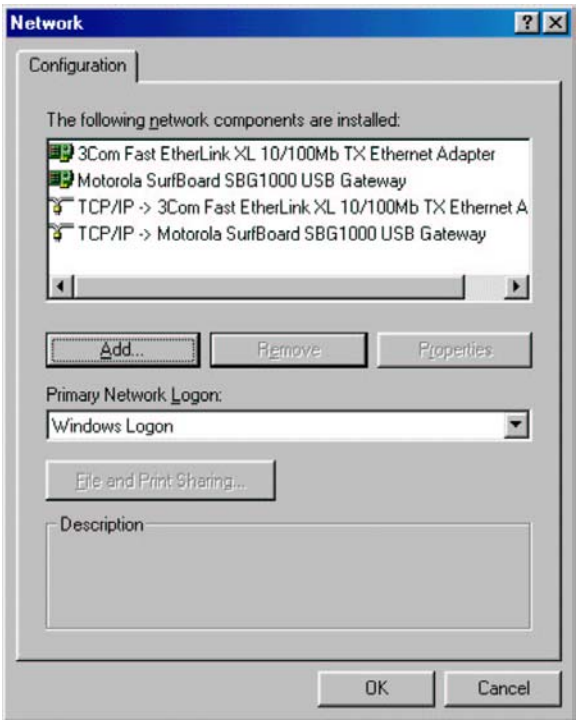
- "Configuring TCP/IP in Windows 95, Windows 98, or Windows ME"
- "Configuring TCP/IP in Windows 2000"
- "Configuring TCP/IP in Windows XP"
- Follow the instructions in your Macintosh or UNIX user manual

After configuring TCP/IP, perform *one* of the following to verify the IP address:

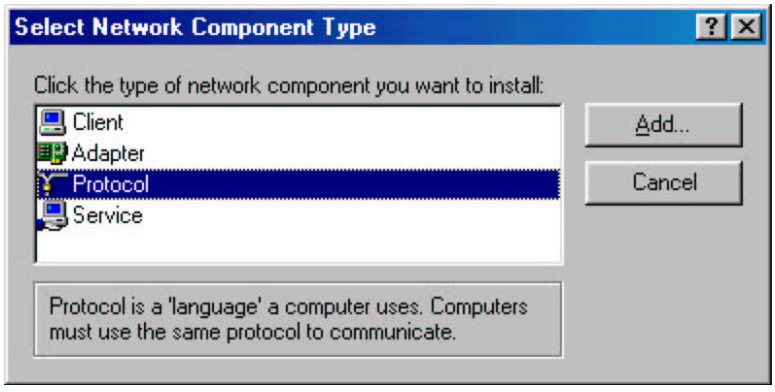
- "Verifying the IP Address in Windows 95, Windows 98, or Windows Me"
- "Verifying the IP Address in Windows 2000 or Windows XP"
- Follow the instructions in your Macintosh or UNIX user manual

Configuring TCP/IP in Windows 95, Windows 98, or Windows Me

1 On the Windows Desktop, click **Start**.
2 Select **Settings** and then **Control Panel** from the pop-up menus to display the Control Panel window.
3 Double-click the **Network** icon to display the Network window:

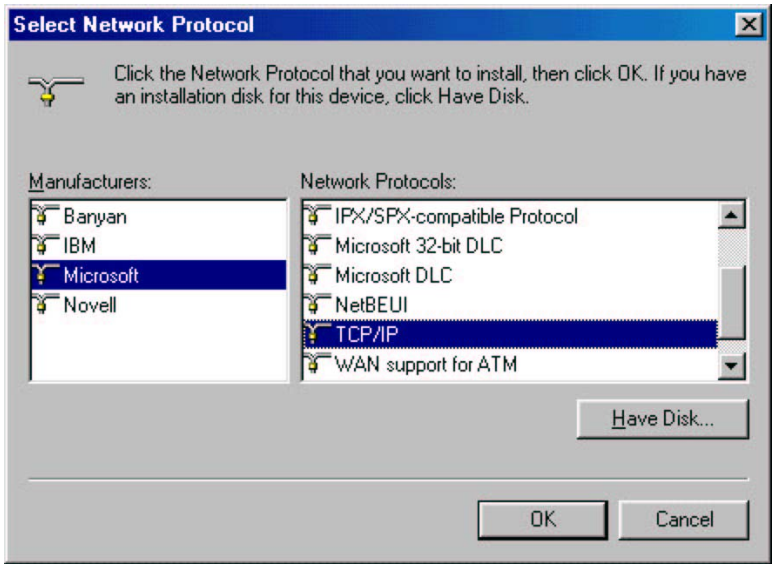


4 Select the **Configuration** tab.
5 Verify that TCP/IP is installed for the adapter used to connect to the SBG1000. If TCP/IP is installed, skip to step 10. If TCP/IP is not installed for the adapter, continue with step 6.
6 Select the adapter to use for the SBG1000 connection and click **Add**. The Select Network Component Type window is displayed: Although your SBG model number may be different than in the images in this guide, the procedure is the same.

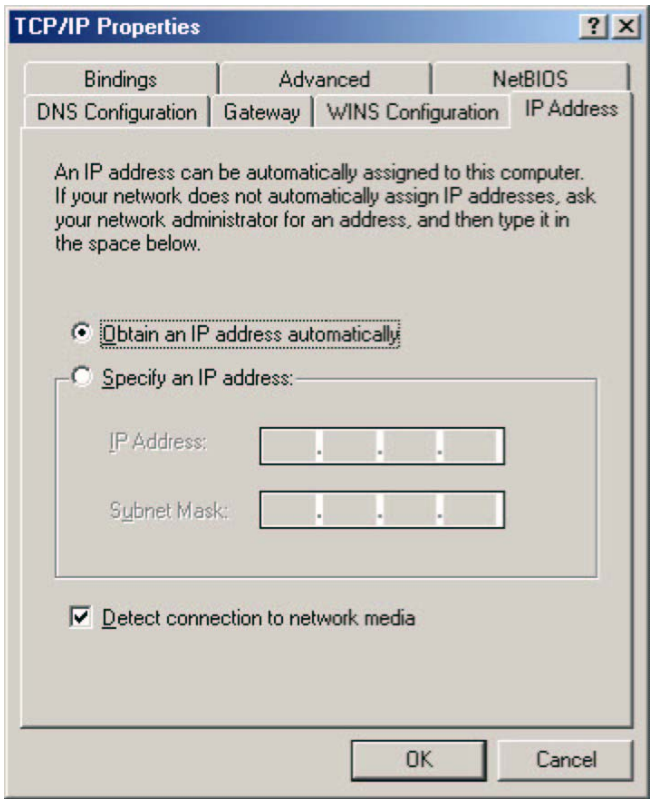


7 Click **Protocol** and click the **Add** button.

8 Click **Microsoft** in the Manufacturers section and click **TCP/IP** in the Network Protocol section of Select Network Protocol window:



9 Click **OK**.
10 Click **TCP/IP** on the Network window. If there is more than one TCP/IP entry, choose the one for the Ethernet card or USB port connected to the SBG1000.
11 Click **Properties**. The TCP/IP Properties window is displayed:

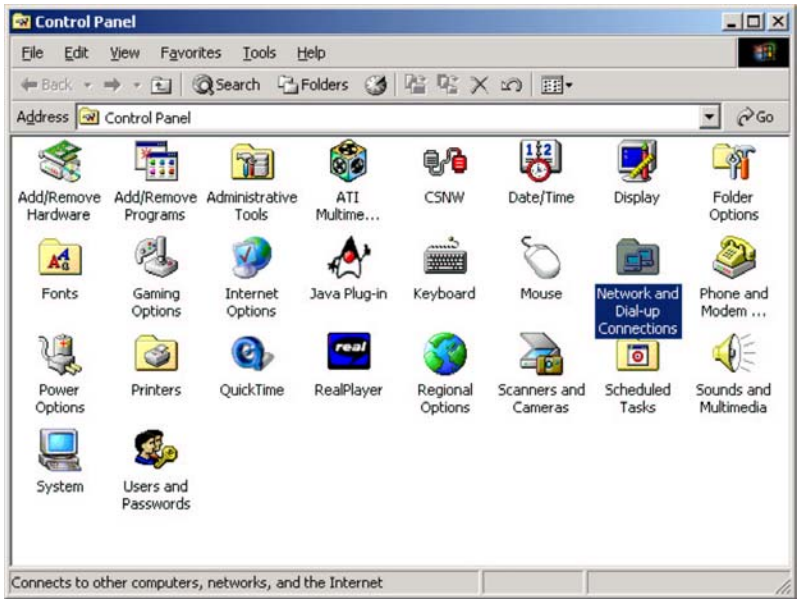

TCP/IP Properties
Bindings
Advanced
NetBIOS
DNS Configuration
Gateway
WINS Configuration
IP Address
An IP address can be automatically assigned to this computer. If your network does not automatically assign IP addresses, ask your network administrator for an address, and then type it in the space below.
Obtain an IP address automatically
Specify an IP address:
IP Address:
Subnet Mask:
Detect connection to network media
OK
Cancel

12 Click the **IP Address** tab.
13 Click **Obtain an IP address automatically**.
14 Click **OK** to accept the TCP/IP settings.
15 Click **OK** to close the Network window.
16 Click **OK** when prompted to restart the computer and click **OK** again.
When you complete TCP/IP configuration, go to “Verifying the IP Address in Windows 95, Windows 98, or Windows Me”

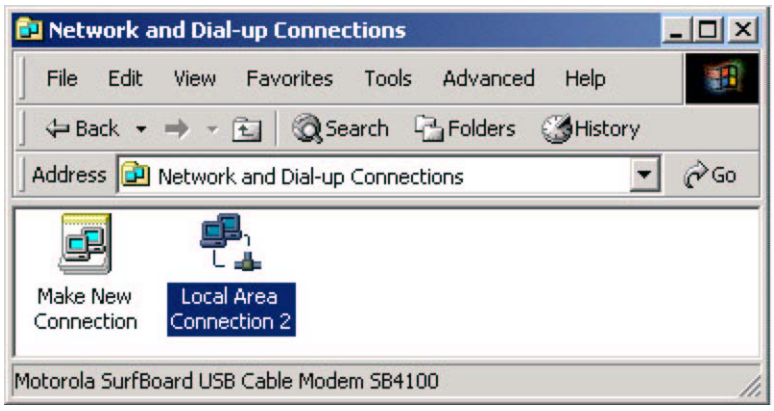
Configuring TCP/IP in Windows 2000

1 On the Windows Desktop, click **Start**.

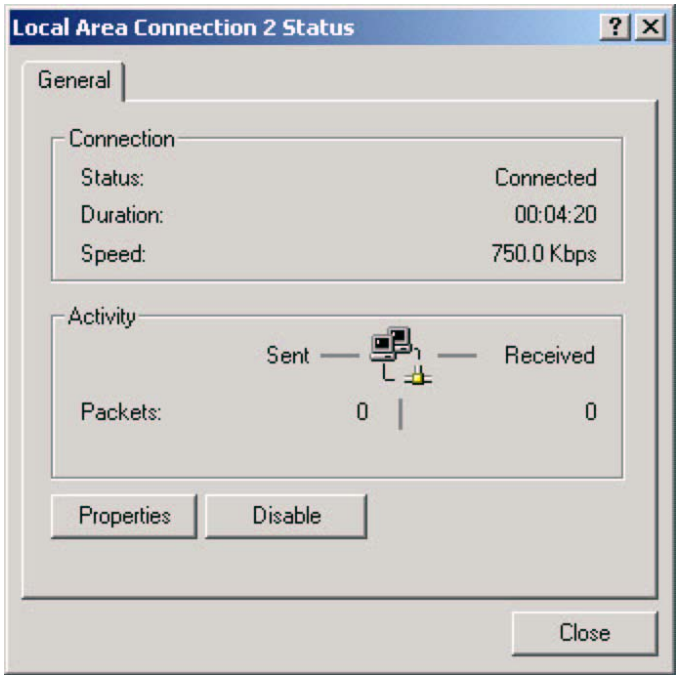
2 Select **Settings** and then **Control Panel** from the pop-up menus to display the Control



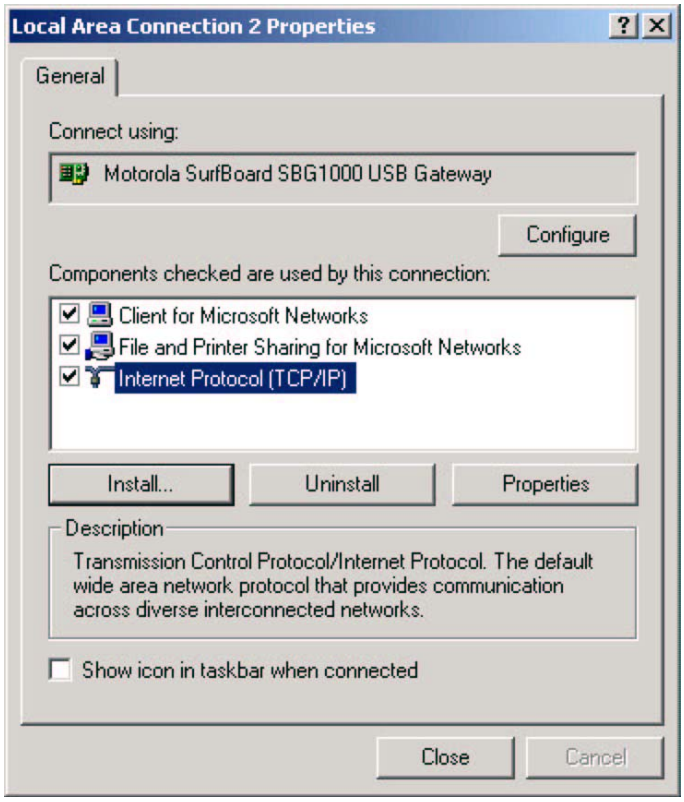
3 Double-click the **Network and Dial-up Connections** icon to display the Network and Dial-up Connections window:


Network and Dial-up Connections
File Edit View Favorites Tools Advanced Help
Back Search Folders History
Address Network and Dial-up Connections
Go
Make New Connection
Local Area Connection 2
Motorola SurfBoard USB Cable Modem SB4100

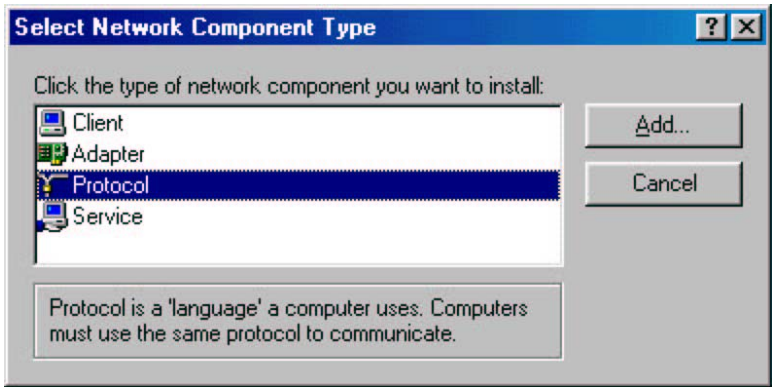
4 Click **Local Area Connection** *number*. The value of *number* varies from system to system. The Local Area Connection *number* Status window is displayed:



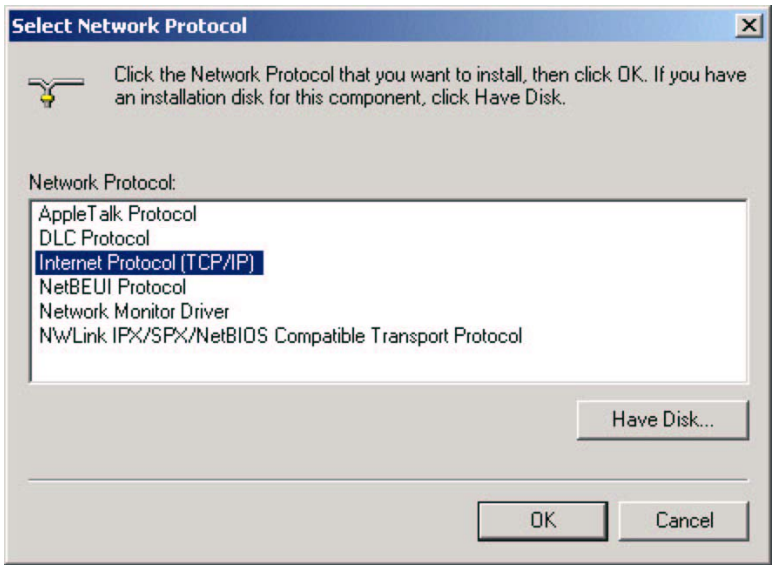
5 Click **Properties**. Information similar to the following window is displayed:



6 If Internet Protocol (TCP/IP) is in the list of components, TCP/IP is installed. You can skip to step 10. If Internet Protocol (TCP/IP) is not in the list, click **Install**. The Select Network Component Type window is displayed:

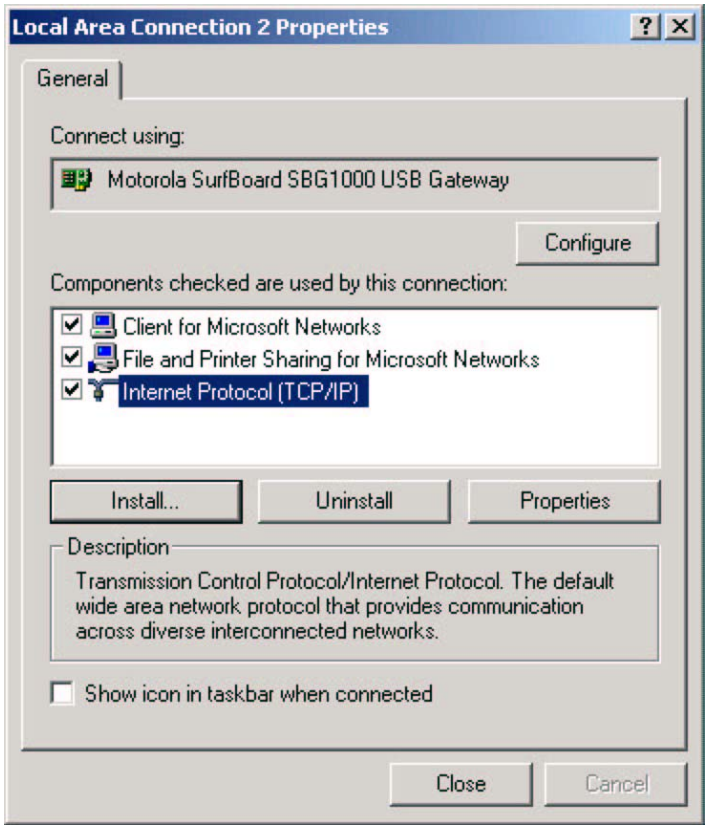


7 Click **Protocol** on the Select Network Component Type window and click **Add**. The Select Network Protocol window is displayed:

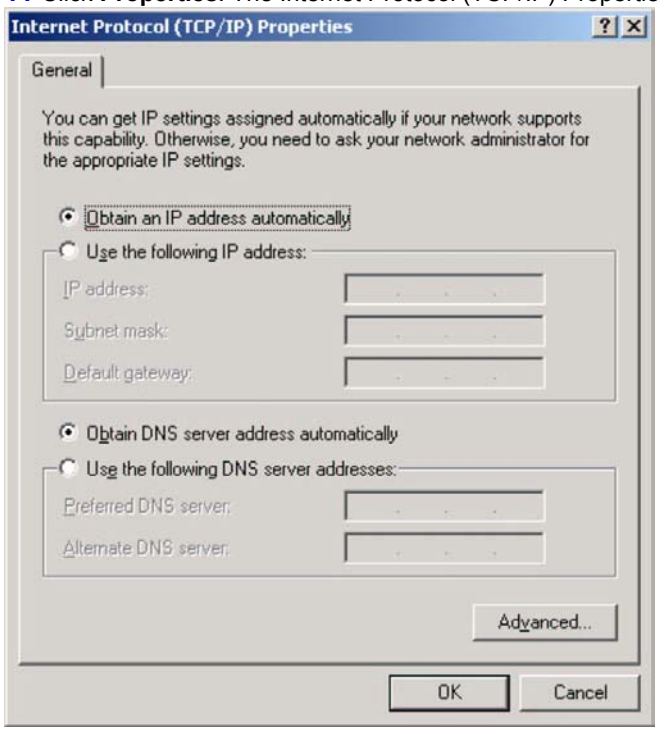

Select Network Protocol
Click the Network Protocol that you want to install, then click OK. If you have an installation disk for this component, click Have Disk.
Network Protocol:
AppleTalk Protocol
DLC Protocol
Internet Protocol (TCP/IP)
NetBEUI Protocol
Network Monitor Driver
NWLink IPX/SPX/NetBIOS Compatible Transport Protocol
Have Disk...
OK
Cancel

8 Click **Internet Protocol (TCP/IP)**.

9 Click **OK**. The Local Area Connection *number* Properties window is re-displayed.



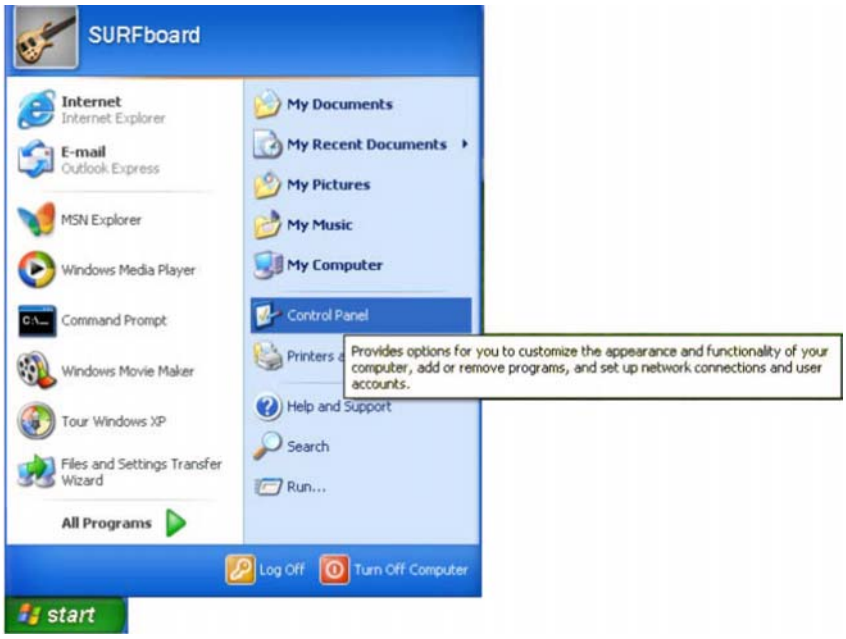
10 Be sure the box next to Internet Protocol (TCP/IP) is checked.
11 Click **Properties**. The Internet Protocol (TCP/IP) Properties window is displayed:


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

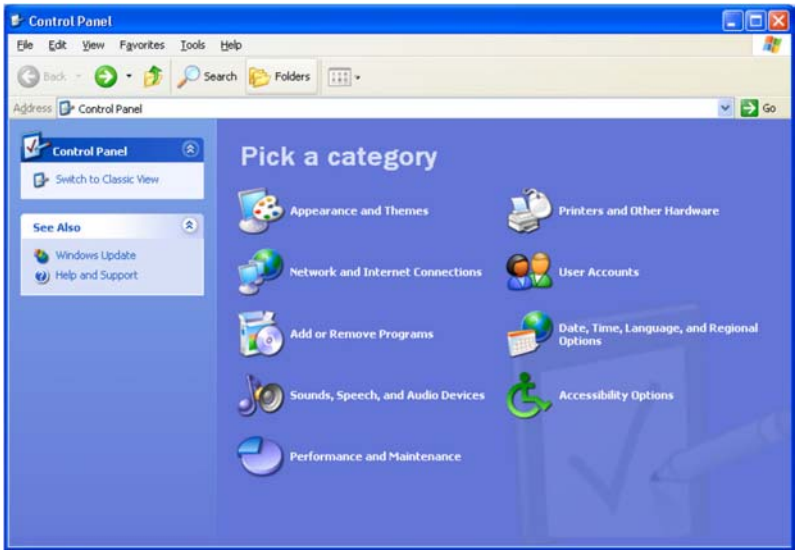
12 Be sure **Obtain IP address automatically** and **Obtain DNS server address automatically** are selected.
13 Click **OK** to accept the TCP/IP settings.
14 Click **OK** to close the Local Area Connection *number* Properties window.
15 Click **OK** when prompted to restart the computer and click **OK** again.
When you complete the TCP/IP configuration, go to "Verifying the IP Address in Windows 2000 or Windows XP"

Configuring TCP/IP in Windows XP

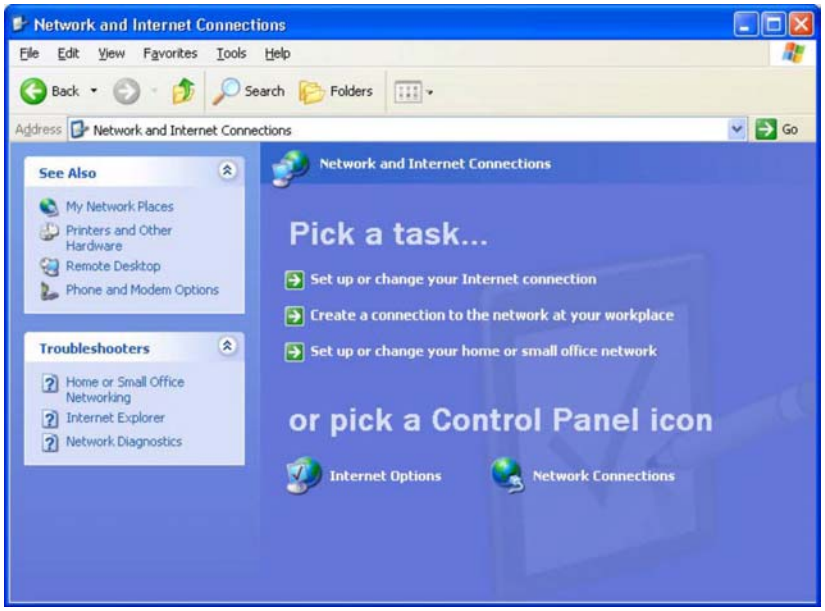
1 On the Windows desktop, click **Start** to display the Start window:



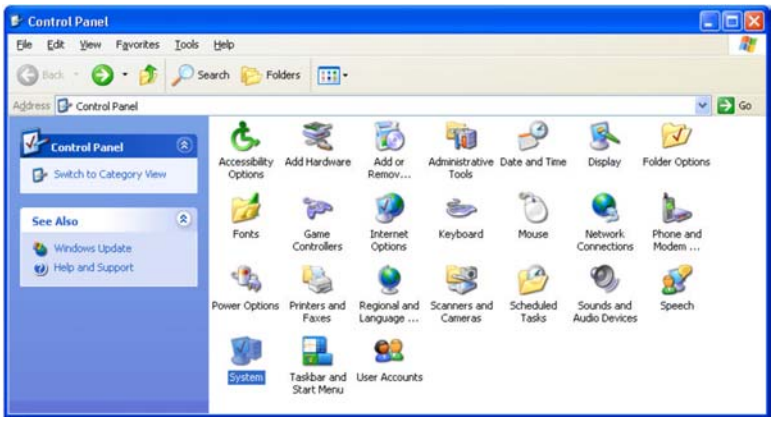
2 Click **Control Panel** to display the Control Panel window. The display varies, depending on the Windows XP view options. If the display is a Category view as shown below, continue with step 3. Otherwise, skip to step 5.



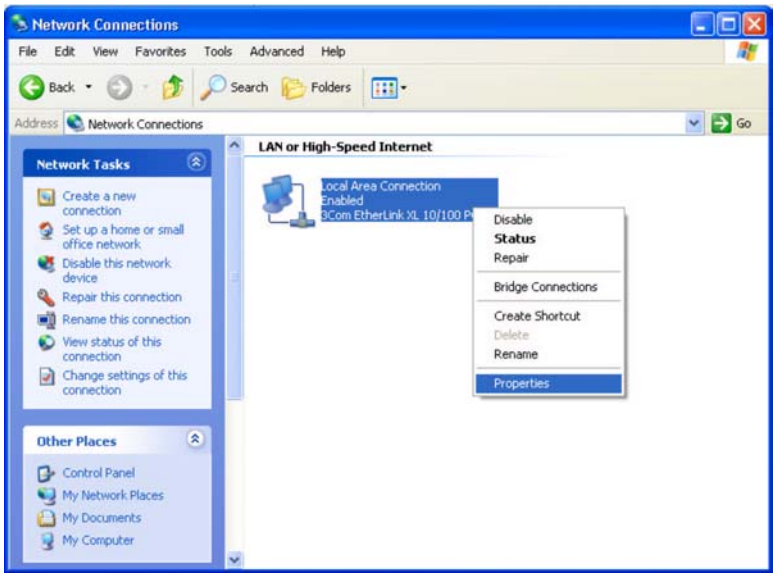
3 Click **Network and Internet Connections** to display the Network and Internet Connections window:


Network and Internet Connections
File Edit View Favorites Tools Help
Back Search Folders
Address Network and Internet Connections
Go
See Also
My Network Places
Printers and Other Hardware
Remote Desktop
Phone and Modem Options
Troubleshooters
Home or Small Office Networking
Internet Explorer
Network Diagnostics
Network and Internet Connections
Pick a task...
Set up or change your Internet connection
Create a connection to the network at your workplace
Set up or change your home or small office network
or pick a Control Panel icon
Internet Options
Network Connections

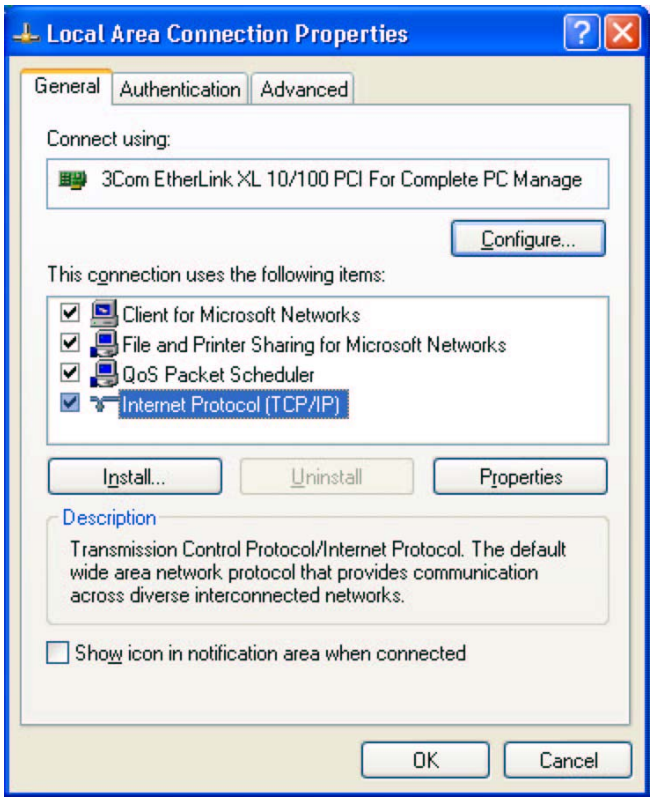
4 On the Network and Internet Connections window in the “or pick a Control Panel icon, click **Network Connections** to display the LAN or High-speed Internet connections. Skip to step 6.
5 If a classic view similar to below is displayed, click **Network Connections** to display the LAN or High-speed Internet connections:



6 Right-click on the network connection. If more than one connection is displayed, be sure to select the one for your network interface:

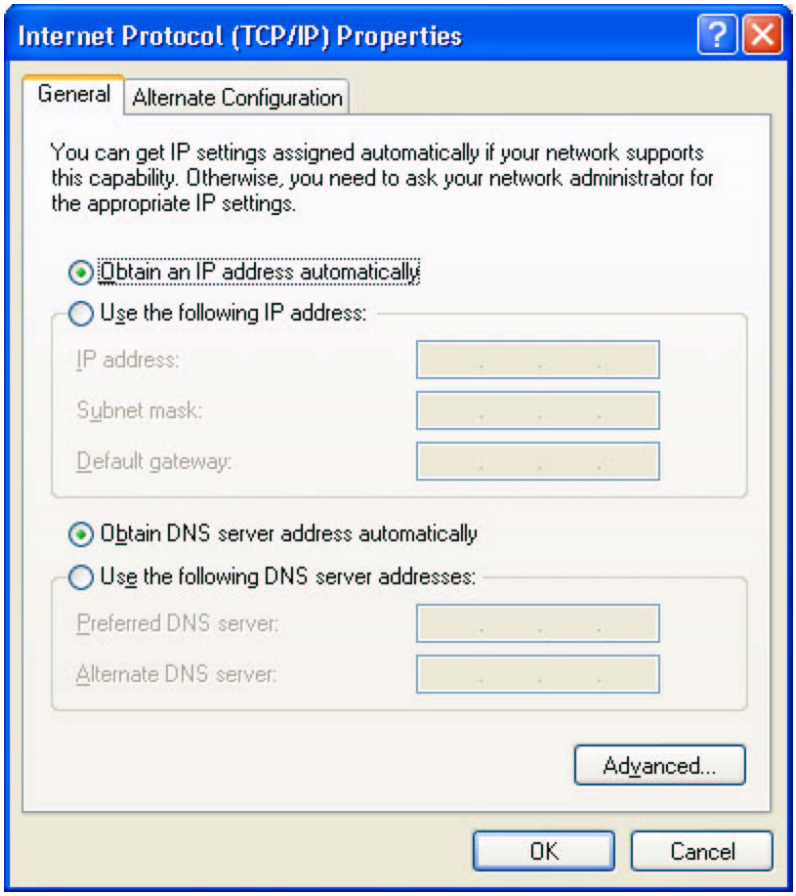


7 Select **Properties** from the pop-up menu to display the Local Area Connection Properties window:



8 On the Local Area Connection Properties window, be sure Internet Protocol (TCP/IP) is checked. If it is not checked, check it.

9 Select **Internet Protocol (TCP/IP)** and click **Properties** to display the Internet Protocol (TCP/IP) Properties window:


Internet Protocol (TCP/IP) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

10 On the Internet Protocol (TCP/IP) Properties window, verify that the settings are correct, as shown above.
11 Click **OK** to close the TCP/IP Properties window.
12 Click **OK** to close the Local Area Connection Properties window.
When you complete the TCP/IP configuration, go to "Verifying the IP Address in Windows 2000 or Windows XP"

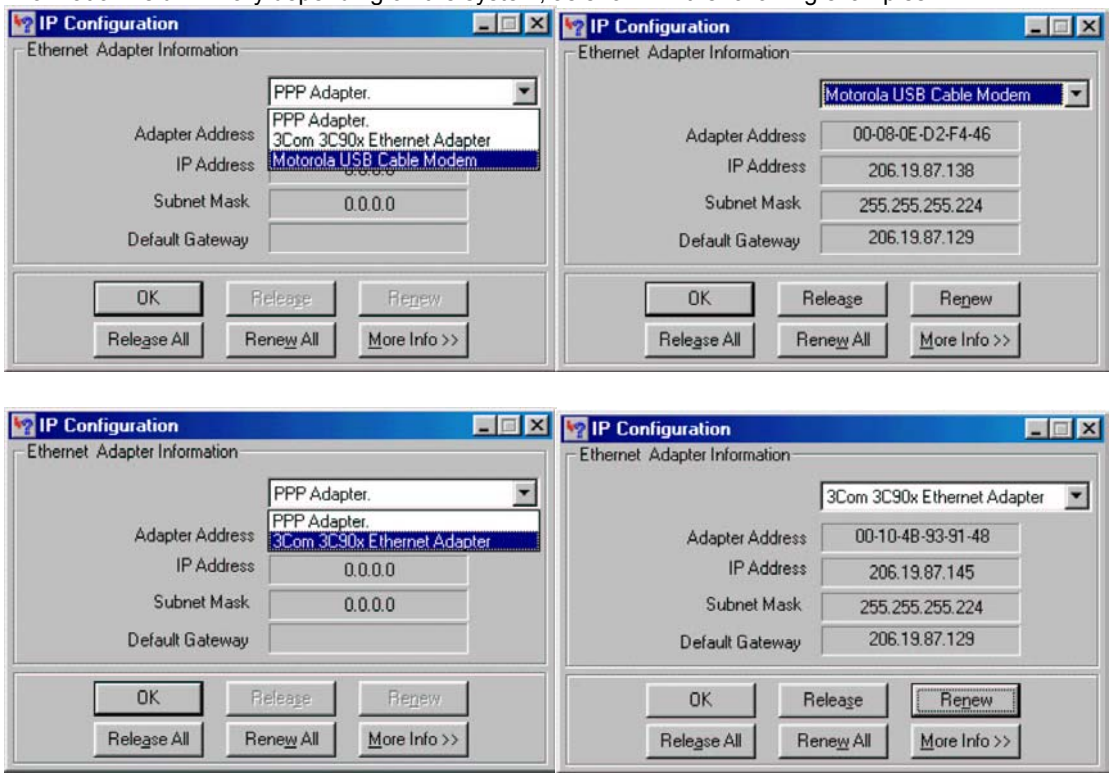
Verifying the IP Address in Windows 95, Windows 98, or Windows Me

To check the IP address:

1 On the Windows Desktop, click **Start**.

2 Select **Run**. The Run window is displayed.

3 Type **winipcfg.exe** and click **OK.** The IP Configuration window is displayed. The Ethernet Adpater Information field will vary depending on the system, as shown in the following examples:



The values for Adapter Address, IP Address, Subnet Mask, and Default Gateway on the PC will be different than in the image.

4 Select the adapter name — the Ethernet card or USB device.

5 Click **Renew**.

6 Click **OK** after the system displays an IP address.

If after performing this procedure the computer cannot access the Internet, call your cable service provider for help.

Verifying the IP Address in Windows 2000 or Windows XP

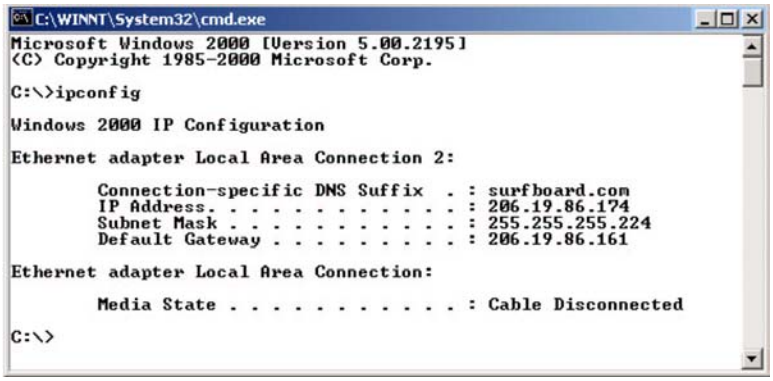
To check the IP address:

1 On the Windows Desktop, click **Start**.

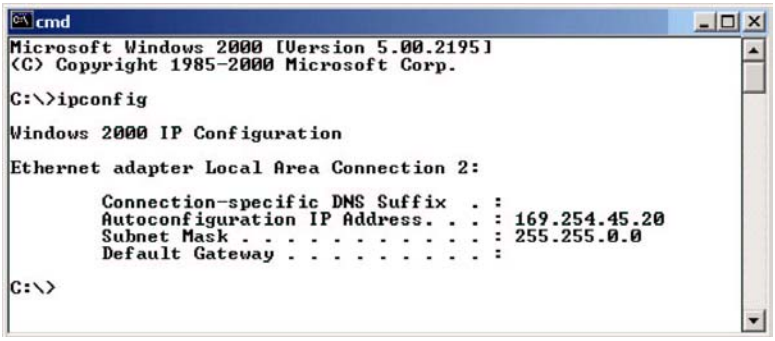
2 Select **Run**. The Run window is displayed.

3 Type **cmd** and click **OK** to display a command prompt window.

4 Type **ipconfig** and press ENTER to display the IP configuration. A display similar to the following indicates a normal configuration:


C:\WINNT\System32\cmd.exe
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.
C:\>ipconfig
Windows 2000 IP Configuration
Ethernet adapter Local Area Connection 2:
Connection-specific DNS Suffix . : surfboard.com
IP Address. . . . . : 206.19.86.174
Subnet Mask . . . . . : 255.255.255.224
Default Gateway . . . . . : 206.19.86.161
Ethernet adapter Local Area Connection:
Media State . . . . . : Cable Disconnected
C:\>

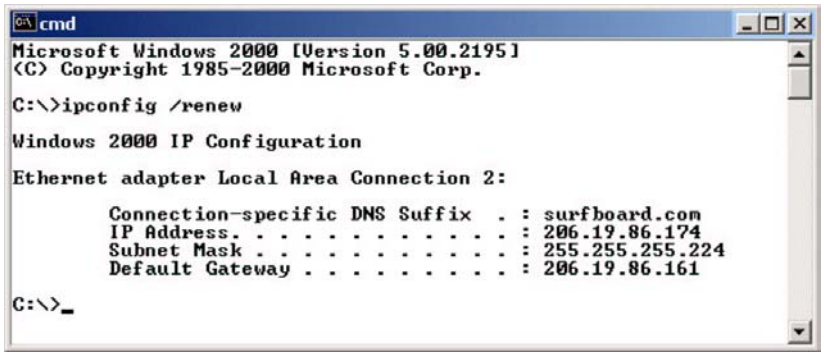
If an Autoconfiguration IP Address is displayed as in the following window, there is an incorrect connection between the PC and the SBG1000 or there are cable network problems. Check the cable connections and determine if you can view cable-TV channels on your television:


cmd
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.
C:\>ipconfig
Windows 2000 IP Configuration
Ethernet adapter Local Area Connection 2:
Connection-specific DNS Suffix . :
Autoconfiguration IP Address. . . : 169.254.45.20
Subnet Mask . . . . . : 255.255.0.0
Default Gateway . . . . . :
C:\>

After verifying the cable connections and proper cable-TV operation, renew the IP address.

To renew the IP address:

1 Type **ipconfig /renew** and press ENTER. If a valid IP address is displayed as shown, Internet access should be available.


cmd
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.
C:\>ipconfig /renew
Windows 2000 IP Configuration
Ethernet adapter Local Area Connection 2:
Connection-specific DNS Suffix . : surfboard.com
IP Address. . . . . : 206.19.86.174
Subnet Mask . . . . . : 255.255.255.224
Default Gateway . . . . . : 206.19.86.161
C:\>

2 Type **exit** and press ENTER to return to Windows.

If after performing this procedure the computer cannot access the Internet, call your cable service provider for help.

Frequently-Asked Questions

Here are answers to questions our customers frequently ask:

Q What is high-speed cable Internet access?

A Cable Internet access uses cable television wires instead of telephone lines to connect to the Internet. It is extremely fast and does not tie up telephone lines for incoming or outgoing calls and faxes.

Q How fast is the Motorola SBG1000 Wireless Cable Modem Gateway?

A Cable modems offer Internet access at speeds up to 100 times faster than a traditional phone modem. You can experience speeds of over 1,000 Kbps. Due to network condition such as traffic volume and the speed of the sites you visit, actual speed may vary. Many network and other factors can affect download speeds.

Q How many users can one SBG1000 support?

A A single SBG1000 can support up to 253 users, each assigned a unique IP address, on a Class C network.

Q What is Network Address Translation?

A NAT is a technique to translate private IP addresses on your LAN to a single IP address assigned by your cable service provider that is that is visible to outside users on the Internet.

Q What is IEEE_802.11b?

A IEEE 802.11b is the IEEE wireless network standard.

Q What type of firewall is provided on the SBG1000?

A The SBG1000 provides a stateful-inspection firewall.

Q What wireless security measures are provided on the SBG1000?

A To protect data transmitted over wireless connections, the SBG1000 supports WEP encryption and MAC access control lists. For information, see "Setting Up the Wireless LAN"

Q Why is there no Standby button?

A As a security measure, current Motorola SURFboard cable modems provide a Standby button to temporarily
suspend the Internet connection. Because the SBG1000 firewall provides high security levels while connected, the Standby button is not required.

Q Can I still watch cable TV while using my Motorola SBG1000 Wireless Cable Modem Gateway?

A Yes, your cable TV line can carry the TV signal while you send and receive information on the Internet.

Q What are CableLabs Certified, DOCSIS, and Euro-DOCSIS?

A CableLabs Certified, DOCSIS, and Euro-DOCSIS are the industry standards for high-speed data distribution
over cable television system networks. They are intended to ensure that all compliant cable modems interface with all compliant cable systems. Your SBG1000 is DOCSIS or Euro-DOCSIS certified.

Q If I have an SBG1000, can I still use my old 28.8 Kbps or 56 Kbps modem?

A Yes you can. However, once you've experienced the speed of cable Internet access, you'll never again want to wait for traditional dial-up services.